Cateye ergociser

CAT EYE ERGOCISER

STAIR CLIMBER TYPE

Applicable Model EC-5000

SERVICE MANUAL

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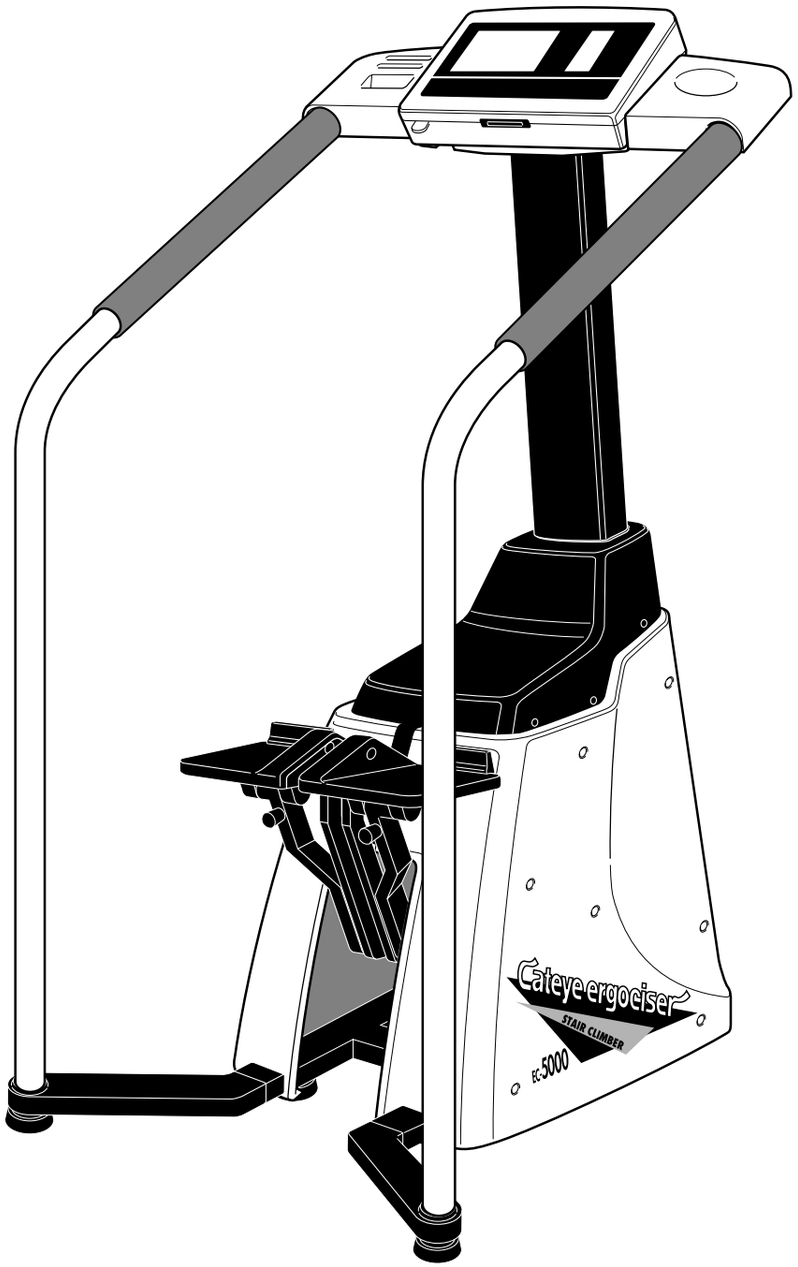


How to Use This Service Manual

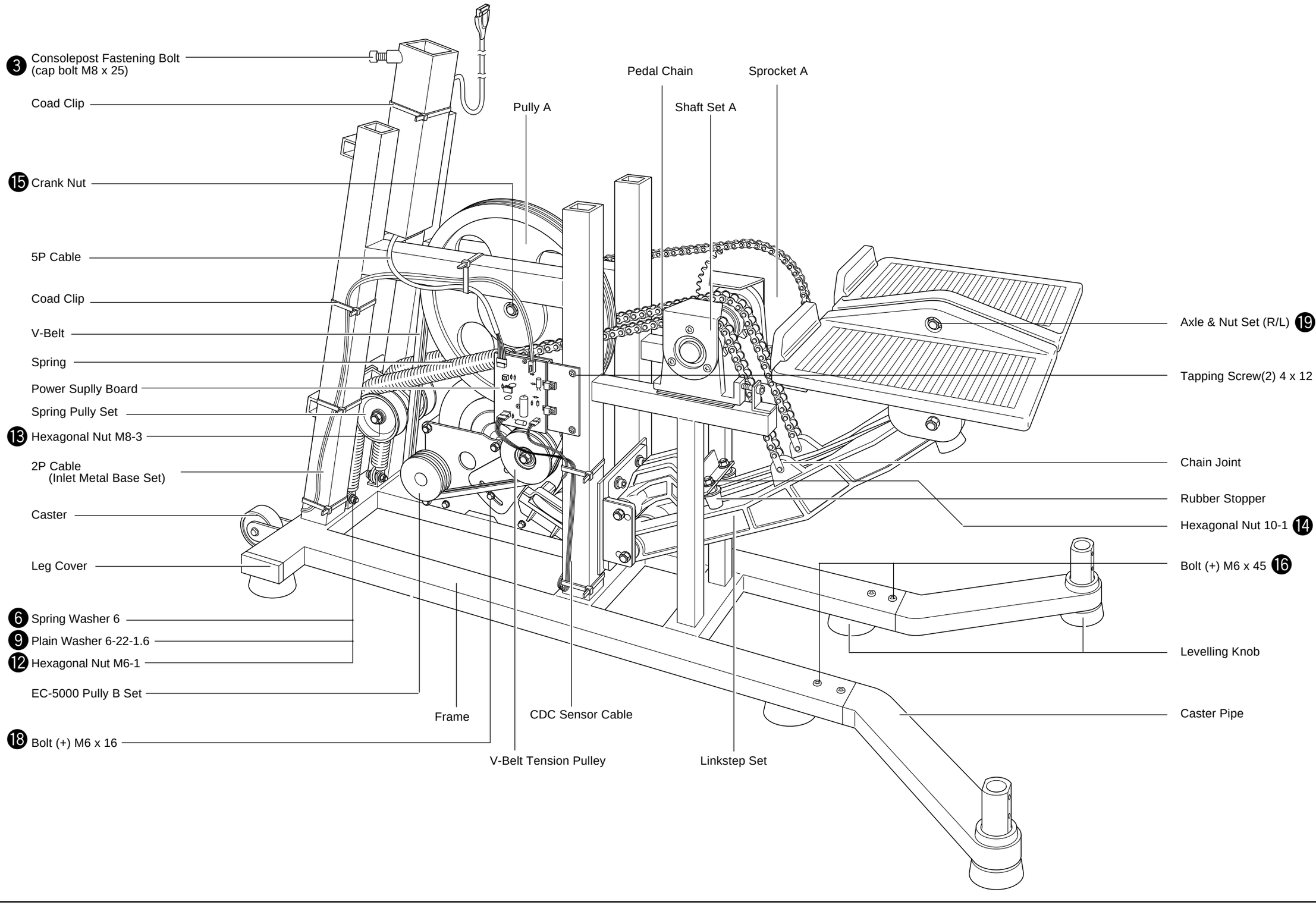
The manual consists of Part A, Part B and Part C. Part A refers to trouble-shooting which allows you to identify the cause and areas to be fixed depending on typical symptoms. Part B shows how to repair and/or adjust specific defects. This part contains sections; How to Repair Electrical Parts [ES] and How to Repair Mechanical Parts [MS].

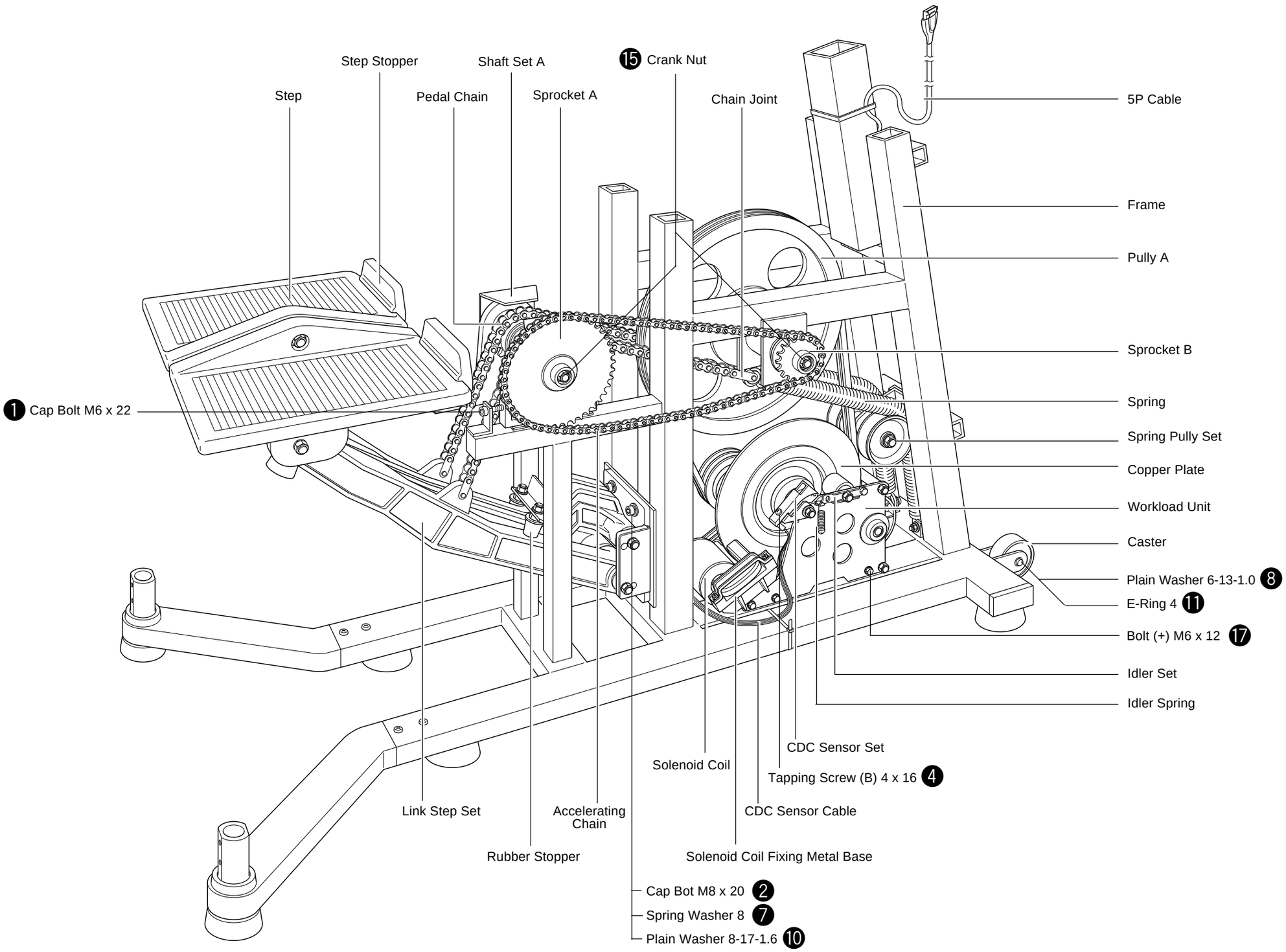
Part C lists up all genuine parts and corresponding parts numbers that will be necessary for replacement or stock.

Whenever any problem has occurred on the main unit, take the following actions to repair or adjust it. Before taking these actions,please always put on gloves and be sure to refer to and understand the corresponding work procedures.

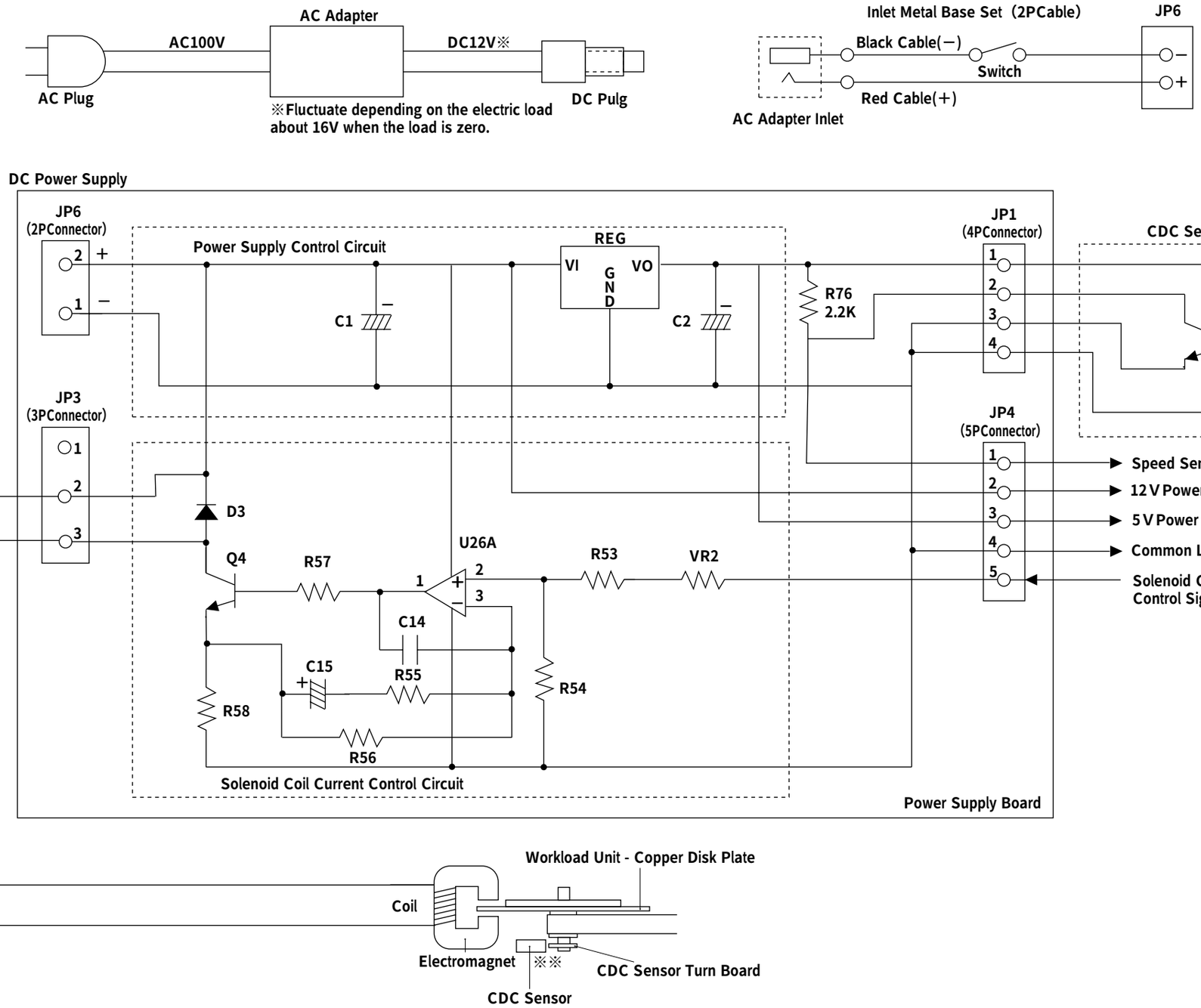
1. Check and identify the cause by referring to Part A.
2. Identify the part name by referring to Name of Parts.
3. Perform repair or adjustment in accordance with the instructions in Part B.
4. Replacement, if required, should be done by using genuine parts as specified in Part C.

Name of Parts

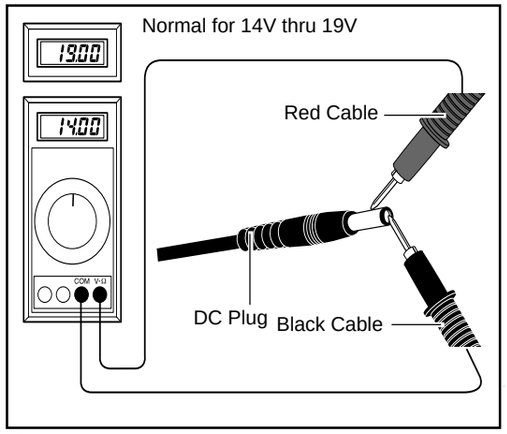
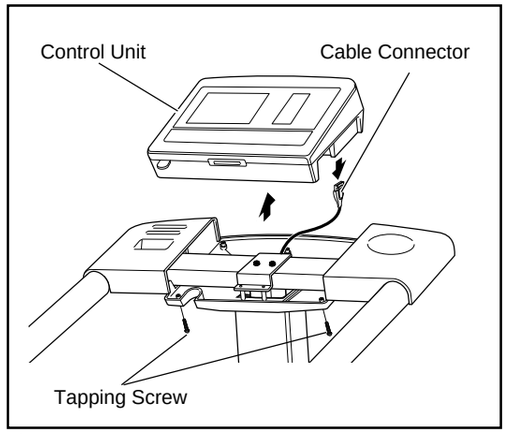



Step
Step Stopper
Pedal Chain
Shaft Set A
Sprocket A
15 Crank Nut
Chain Joint
5P Cable
Frame
Pully A
Sprocket B
1 Cap Bolt M6 x 22
Spring
Spring Pully Set
Copper Plate
Workload Unit
Caster
Plain Washer 6-13-1.0 8
E-Ring 4 11
Bolt (+) M6 x 12 17
Idler Set
Idler Spring
CDC Sensor Set
Solenoid Coil
Tapping Screw (B) 4 x 16 4
Link Step Set
Accelerating Chain
CDC Sensor Cable
Rubber Stopper
Solenoid Coil Fixing Metal Base
Cap Bot M8 x 20 2
Spring Washer 8 7
Plain Washer 8-17-1.6 10

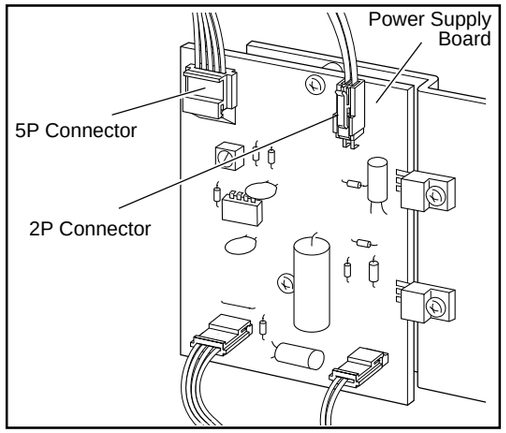
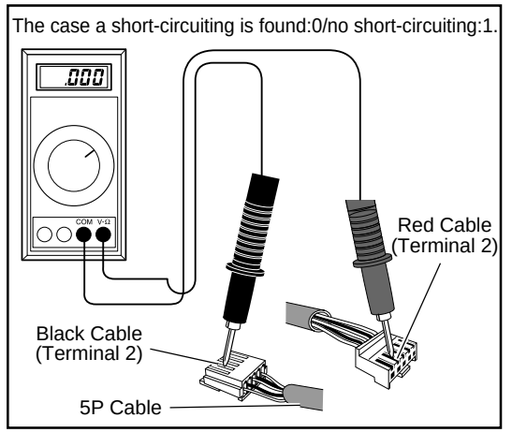
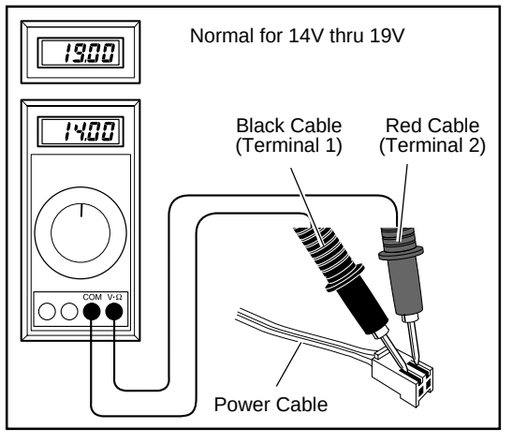
Circuit Diagram



T-1-1 No Display on Control Unit after Power ON. (Back light does not turn on.) (1)

Check Method of Causes	Repair Method	Explanation Figures
Check the power is available at the wall socket before proceeding to checking of causes. [1] Checking the AC Adapter 1. Turn off the power of the main unit, and detach the DC plug from the AC adapter. 2. Connect the AC plug of the AC adapter to the wall socket. 3. Using a tester, measure the voltage at the DC plug which will be connected to the main unit. (Fig. 1) The inner area of the DC plug is minus (-) and the outer area is plus (+). [Note]: Never short-circuit the plug of AC adapter. This will damage the AC adapter. [Judgment] ● When the measured voltage is within the range of 14V to 19V, the AC adapter will be working fine. ● When the measured voltage is 0V or less than 14V, the AC adapter will be defective. In this case, you need to take actions as specified in the repair method (a) described at the right.	(a) Replace the AC adapter.	 Fig.1  Fig.2
When the AC adapter is found to be correct, proceed to the following checkings. [2] Checking the Wiring of Control Unit 1. Loosen the seven screws on the control unit cover to remove the control unit. (Fig. 2) 2. Remove the cable connector at the tip of the 5P cable from the cable inlet which is located at the back of the control unit. (Fig. 2) ● When the 5P cable has been already disconnected, this will be the cause. In this case you need to take actions as specified in the repair method (b) described at the right.	(b) Firmly connect the 5P cable connector to the cable inlet at the back of the control unit before installing the control unit. (See [ES-9: Replacing the Control Unit].)	

T-1-1 No Display on Control Unit after Power ON. (Back light does not turn on.) (2)

Check Method of Causes	Repair Method	Explanation Figures
[3] Checking the Wiring within the Main Unit 1. Remove the cover of the main unit set. (See [D-1: Removing the Frame Covers].) 2. Check if the 5P connector and the 2P connector of the inlet metal base set are connected to the power supply board. (Fig. 3) [Judgment] ● When the 5P connector has been already disconnected, this will be the cause. In this case you need to take actions as specified in the repair method (c) described at the right. ● When the 2P connector has been already disconnected, this will be the cause. In this case you need to take actions as specified in the repair method (d) described at the right. When both 5P and 2P connectors are connected, proceed to the following checkings: 3. Remove the 5P connector at the power supply board. (Fig. 3) 4. Check the short-circuiting by using a tester across the two connectors of the 5P cable (across two Terminal No. 2s). (Fig. 4) If the two connectors are short-circuited, the tester reading will be zero (0). [Judgment] ● When there is no short-circuiting, the 5P cable may be disconnected. In this case, you need to take actions as specified in the repair method (e) described at the right. When short-circuiting is found, check the following: 5. Remove the 2P connector at the power supply board. (Fig. 3) 6. Connect the AC adapter to the main unit, and turn on the main unit. 7. Measure the voltage by using a tester across the terminals of the 2P connector. (Fig. 5) The Terminal 1 is for minus (-) and Terminal 2 is for plus (+). [Judgment] ● When the voltage is not same as in the case of checking procedure [1] (in the range of 14V to 19V), the inlet metal base set might be defective, or the 2P cable might be disconnected. In this case, you need to take actions as specified in the repair method (f) described at the right.	(c) Firmly connect the 5P connector to the power supply board. (d) Firmly connect the 2P connector to the power supply board. (e) Replace the 5P cable. (See [ES-2: Replacing the 5P Cable].) (f) Replace the inlet metal base set. (See [ES-1: Replacing the Wiring within Frame (Inlet Metal Base Set)].)	 Fig.3  Fig.4  Fig.5

T-1-2 No Display on Control Unit after Power ON. (Back light turns on.)

Check Method of Causes	Repair Method	Explanation Figures

[1] Checking the Control Unit

1. Turn off the power of the main unit.
2. Remove seven tapping screws at the cover of control unit, and detach the control unit. (Fig. 1)
3. Disconnect the cable connector, which is at the tip of the 5P cable, from the cable inlet at the back of the control unit. (Fig. 1)
4. Connect the 5P cable to the new control unit, and install to the control unit cover.
5. Turn on the power of the main unit, and check the display.

[Judgment]

- When the display works in the above procedures, the previous control unit might be defective. In this case, you need to take actions as specified in the repair method (a) described at the right.

[2] Checking the 5P Cable

1. Remove the cover of the main unit set.

   (See [D-1: Removing the Frame Covers].)

2. Remove the 5P connector at the power supply board. (Fig. 2)
3. Check the short-circuiting by using a tester across the two connectors of the 5P cable (across two Terminal No. 3s). (Fig. 3)

   If the two connectors are short-circuited, the tester reading will be zero (0).

[Judgment]

- When a short-circuiting is found, the power supply board might be defective. In this case, you need to take actions as specified in the repair method (b) described at the right.
- When there is no short-circuiting, the 5P cable may be disconnected.
  In this case, you need to take actions as specified in the repair method (c) described at the right.

(a) Replace the control unit.

(See [ES-9: Replacing the Control Unit].)

(b) Replace the power supply board.

(See [ES-3: Replacing the Power Supply Board].)

(c) Replace the 5P cable.

(See [ES-2: Replacing the 5P Cable].)

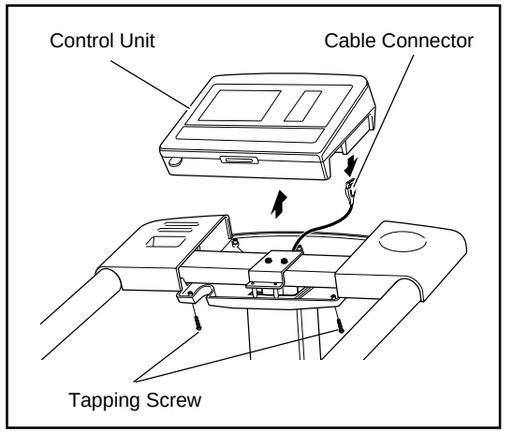


Fig.1

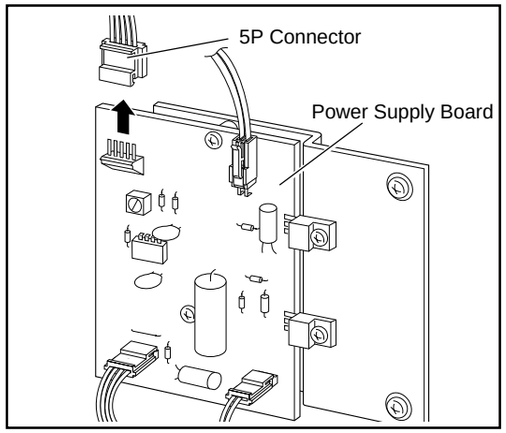


Fig.2

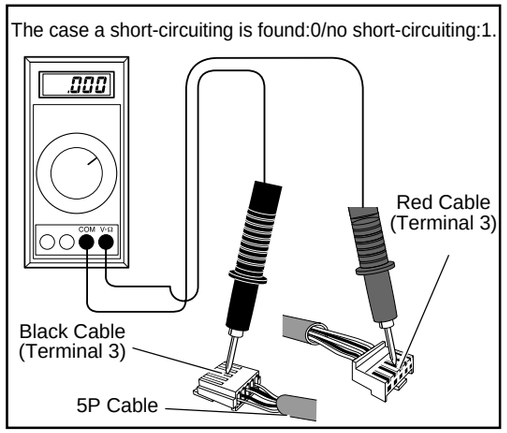


Fig.3

T-2 No Display of Cadence when the Pedal is Rotated. (1)

Check Method of Causes	Repair Method	Explanation Figures

[1] Checking the Control Unit

1. Turn off the power of the main unit.
2. Loosen the seven screws on the cover of the control unit to remove the control unit. (Fig. 1)
3. Remove the cable connector, which is at the tip of the 5P cable, from the cable inlet at back of the control unit. (Fig. 1)
4. Turn on the power of the main unit.
5. Slowly move the pedal while measuring the voltage across the terminals 1 and 4 of the cable connector. (Fig. 2)

   The Terminal 1 is for plus (+) and Terminal 4 is for minus (-).

[Judgment]

- When the voltage frequently changes between approx. 5V and 0V, this shows that the main unit set is working fine but that the control unit might be defective. In this case, you need to take actions as specified in the repair method (a) as described at the right.
- When the voltage does not change as stated above, check and record the voltage readings. These numbers will be necessary at later stages as conditions for checks and [Judgment].

When the voltage changes are found to be abnormal, check the following items:

[2] Checking the 5P Cable

1. Turn off the power of the main unit.
2. Remove the cover of the main unit set.
   (See [D-1: Removing the Frame Covers].)
3. Remove the 5P connector at the power supply board. (Fig. 3)
4. Check the short-circuiting by using a tester across the two connectors (Terminals No. 4) across the 5P cable. (Fig. 4)

   When there is a short-circuiting, the tester reading will be zero (0).

[Judgment]

- When there is no short-circuiting, the 5P cable might be disconnected.
  In this case, you need to take actions as specified in the repair method (b) as described at the right.
- When there is a short-circuiting and the voltage having been checked during the procedure [1] is approx. 2V to 3V, the CDC sensor might be defective. In this case, you need to take actions as specified in the repair method (c) as described at the right.

When there is a short-circuiting and the voltage having been checked during the procedure [1] is 0V or fixed at approx. 5V, proceed to check [3].

(a) Replace the control unit.

(See [ES-9: Replacing the Control Unit].)

(b) Replace the 5P cable.

(See [ES-2: Replacing the 5P Cable].)

(c) Replace the CDC sensor set.

(See [ES-6: Replacing the CDC Sensor Set].)

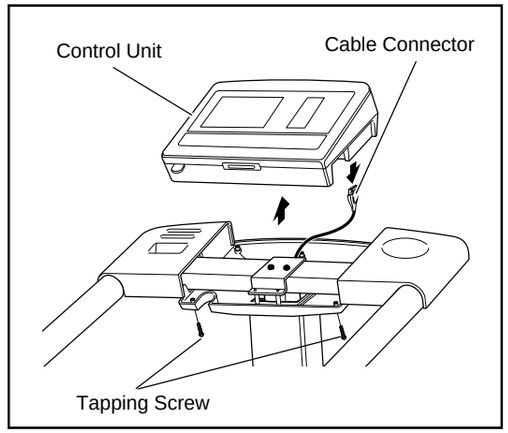


Fig.1

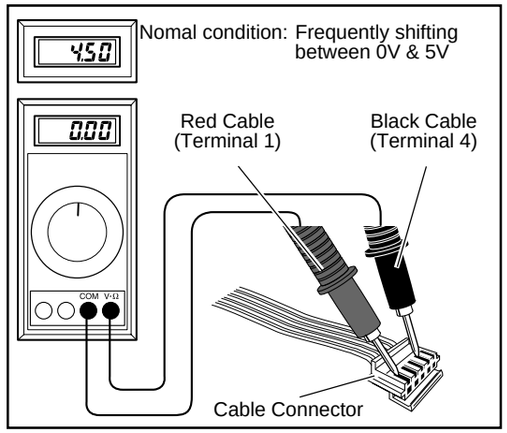


Fig.2

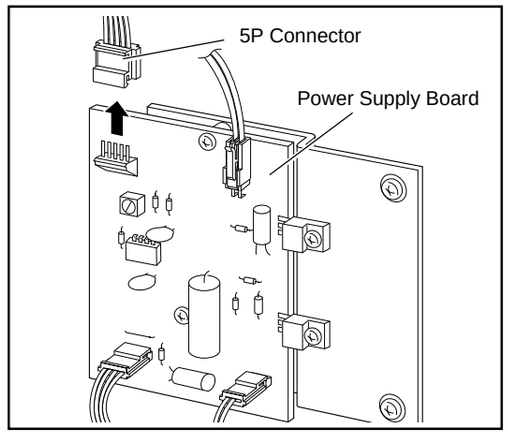


Fig.3

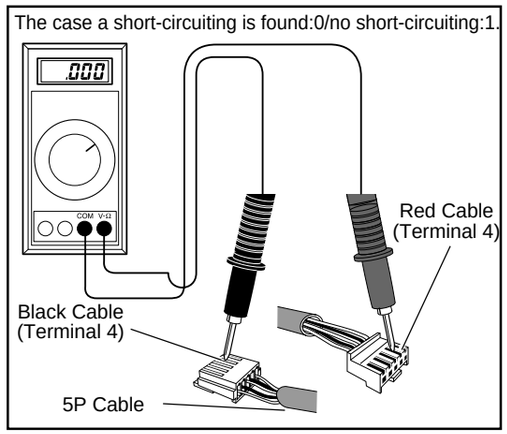


Fig.4

T-2 No Display of Cadence when the Pedal is Rotated. (2)

Check Method of Causes	Repair Method	Explanation Figures

When the voltage having been checked during the procedure [1] on the previous page is 0V or fixed at approx. 5V, proceed to the following procedures.

[3] Checking the CDC Sensor

1. Replace the CDC sensor cable with a new one.
   - A. Remove the CDC sensor cable from the CDC sensor set. (Fig. 5)
   - B. Remove the 4P connector at the power supply board, and then remove the CDC sensor cable. (Fig. 6)
   - C. Connect the 4P connector, which is at the tip of the new CDC sensor cable, to both the CDC sensor set and the connector at the power supply board. (Figs. 5 and 6)
2. Connect the 5P cable to the power supply board, and check the voltage. (Fig. 7)
   - A. Turn on the power of the main unit.
   - B. Slowly move the pedal while measuring the voltage across the terminals 1 and 4 at the cable connector of the 5P cable (5P connector at the side of the control unit connection). (Fig. 8)

     Terminal 1 is for plus (+) and Terminal 4 is for minus (-).
   - C. The CDC sensor is working fine when the voltage frequently changes between approx. 5V and 0V.

[Judgment]

- When the voltage check is found to be alright, the CDC sensor cable might be disconnected. In this case, you need to take actions as specified in the repair method (d) as described at the right.

When the voltage check is found to be incorrect, proceed to the checking procedures on the next page.

(d) Replace the CDC sensor cable.

(See [ES-7: Replacing the CDC Sensor Cable].)

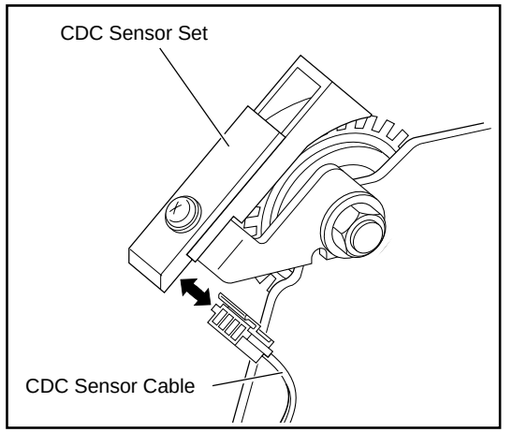


Fig.5

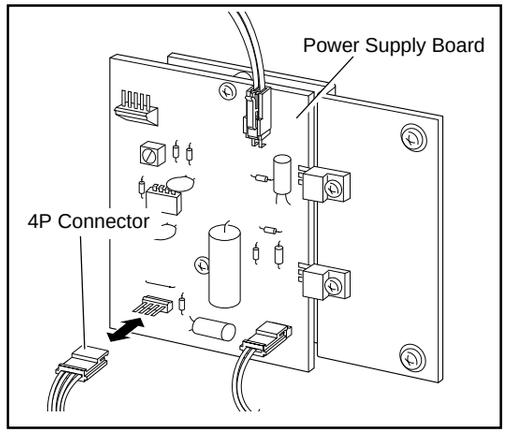


Fig.6

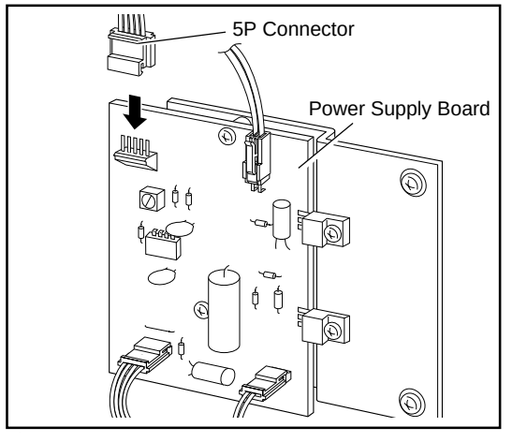


Fig.7

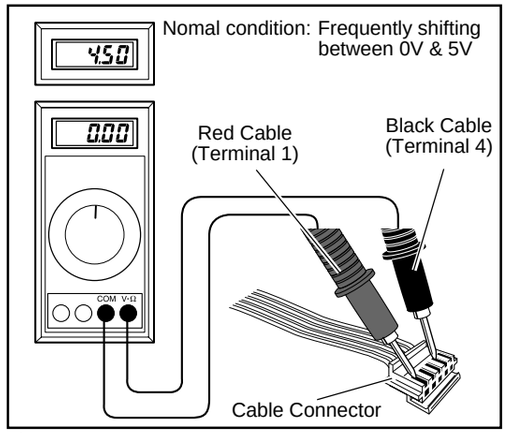
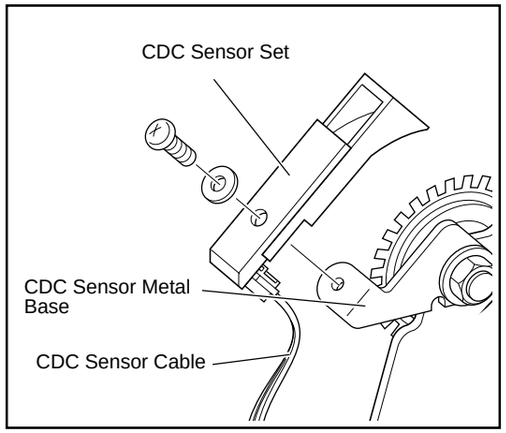
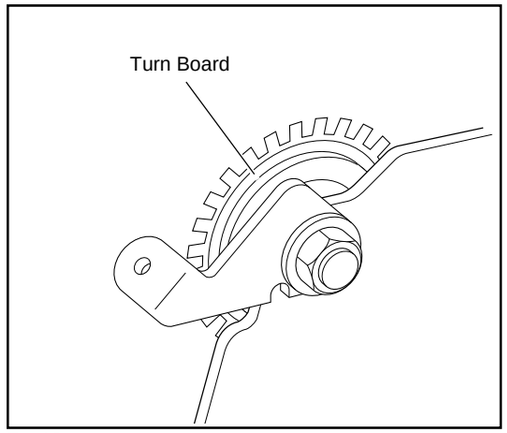
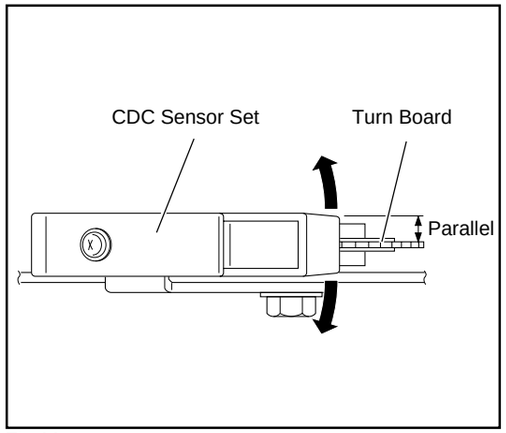
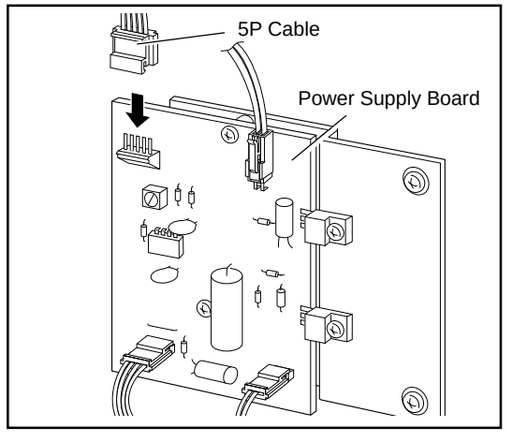
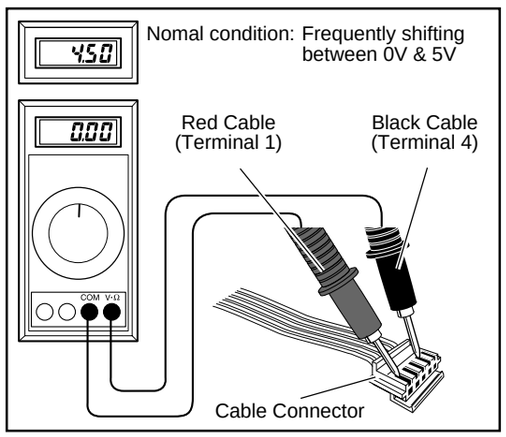


Fig.8

T-2 No Display of Cadence when the Pedal is Rotated. (3)

Check Method of Causes	Repair Method	Explanation Figures
[3] Checking the CDC Sensor (Continued) 3. Remove the CDC sensor set. A. Remove the CDC sensor set by loosening screws. (Fig. 9) B. Disconnect the CDC sensor cable from the CDC sensor set. 4. Rotate the CDC magnet to check if it is damaged or clogged. (Fig. 10) [Judgment] ● Damaged CDC magnet will be the cause of the problem. In this case, you need to take actions as specified in the repair method (e) as described at the right. 5. When the CDC magnet is clogged, remove dust from the magnet. 6. Install the CDC sensor set. A. First, connect the CDC sensor set and the CDC sensor cable, and then mount it to the CDC sensor metal base. (Fig. 9) B. Rotate the CDC sensor around the screw, and adjust the sensor so that it can be positioned to parallel with the CDC magnet with the condition that the sensor does not touch the magnet. (Fig. 11) 7. Connect the 5P cable to the power supply board, and check the voltage. (Fig. 12) A. Turn on the power of the main unit. B. Slowly move the pedal while measuring the voltage across the terminals 1 and 4 at the cable connector of the 5P cable (5P connector at the side of the control unit connection). (Fig. 13) Terminal 1 is for plus (+) and Terminal 4 is for minus (-). C. The CDC sensor is working fine when the voltage frequently changes between approx. 5V and 0V. [Judgment] ● When the voltage check is found to be all right, the possible cause is the clogging of the CDC magnet or incorrect positioning of the CDC sensor. In this case, you need to take actions as specified in the repair method (f) as described at the right. When the voltage is not correct, proceed to the checking procedures described on the next page.	(e) Replace the workload unit. (See [MS-1: Replacing the Workload Unit].) (f) Present status is correct. Go ahead to assemble Ergociser.	 Fig.9  Fig.10  Fig.11  Fig.12  Fig.13

T-2 No Display of Cadence when the Pedal is Rotated. (4)

Check Method of Causes	Repair Method	Explanation Figures

[3] Checking the CDC Sensor (Continued)

8. Replace the CDC sensor set with a new one.
   - A. Remove the CDC sensor set by loosening screws. (Fig. 14)
   - B. Detach the CDC sensor cable from the CDC sensor set.
   - C. First, connect the CDC sensor set and the CDC sensor cable, and then mount it to the CDC sensor metal base. (Fig. 14)
   - D. Rotate the CDC sensor around the screw, and adjust the sensor so that it can be positioned to parallel with the CDC magnet with the condition that the sensor does not touch the magnet. (Fig. 15)
9. Connect the 5P cable to the power supply board, and check the voltage. (Fig. 16)
   - A. Turn on the power of the main unit.
   - B. Slowly move the pedal while measuring the voltage across the terminals 1 and 4 at the cable connector of the 5P cable (5P connector at the side of the control unit connection). (Fig. 17)

     Terminal 1 is for plus (+) and Terminal 4 is for minus (-).
   - C. The CDC sensor is working fine when the voltage frequently changes between approx. 5V and 0V.

[Judgment]

- When the voltage check is found to be all right, the possible cause is the breakage of the CDC sensor. In this case, you need to take actions as specified in the repair method (g) as described at the right.
- When the voltage is incorrect, the possible cause is the breakage of the power supply board. In this case, you need to take actions as specified in the repair method (h) as described at the right.

(g) Replace the CDC sensor set.

(See [ES-6: Replacing the CDC Sensor Set].)

(h) Replace the power supply board.

(See [ES-3: Replacing the Power Supply Board].)

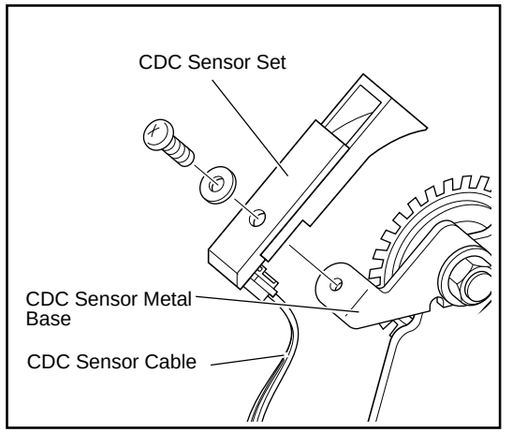


Fig.14

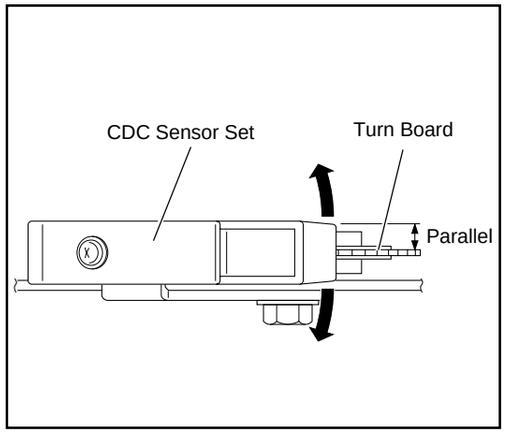


Fig.15

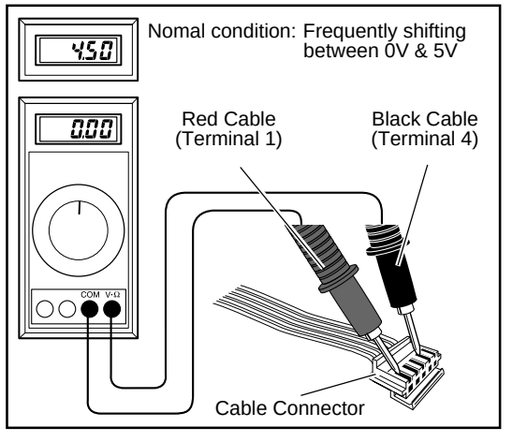


Fig.16

T-3 No Display of Pulse Rate

Check Method of Causes	Repair Method	Explanation Figures
1. Turn on the power of the main unit to display the in-training screen (any exercise program). 2. Install a brand new pulse sensor, and check if pulse rate will be displayed. [Judgment] ● If the pulse rate can be displayed, the old pulse sensor is defective. In this case, you need to take actions as specified in the repair method (a) described at the right. ● If the pulse rate cannot be displayed, the control unit is defective. In this case, you need to take actions as specified in the repair method (b) described at the right.	(a) Replace the pulse sensor. (b) Replace the control unit. (See [ES-9: Replacing the Control Unit].)	

T-4 No Display of Heart Rate (The case with Wireless Chestbelt Pulse Sensor Kit) (1)

Check Method of Causes

First, check the items as described in the section [Trouble-Shooting and Handling Care] of the Operating Instructions which comes with the Wireless Chestbelt Pulse Sensor Kit.

When the symptom does not go with those items, proceed to the following checks.

[1] Checking the Wireless Chestbelt Pulse Sensor

1. Turn on the power to display the in-training screen (any exercise program).
2. Install a new transmitter on the chestbelt as described in the operating Instructions for the Wireless Chestbelt Pulse Sensor Kit.

   Check if your pulse rate will be displayed.

[Judgment]

- When the heart rate can be displayed, the previous transmitter might be defective. In this case, you need to take actions as specified in the repair method (a) described at the right.

When the heart rate cannot be displayed, proceed to the following checks.

[2] Checking the Receiver Board

1. Turn off the power of the main unit.
2. Remove seven tapping screws on the control unit cover and detach the control unit. (Fig. 1)
3. Disconnect the cable connector, which is at the tip of the 5P cable, from the cable inlet at the back of the control unit. (Fig. 1)
4. Remove ten screws at the back of the control unit and remove the rear panel of the control unit. (Fig. 2)
5. Check that connectors at both ends of the connector cable which connects the receiver board and the board within the control panel are not disconnected from respective boards. (Fig. 3)

[Judgment]

- The disconnected connectors are the possible cause of the problem.
  In this case, you need to take actions as specified in the repair method (b) described at the right.

When the connector cable is correctly connected, proceed to the procedures as described in the next page.

Repair Method

(a) Replace the transmitter.

(b) Firmly connect the connector cable to the connectors of both the receiver board and the control unit.

Explanation Figures

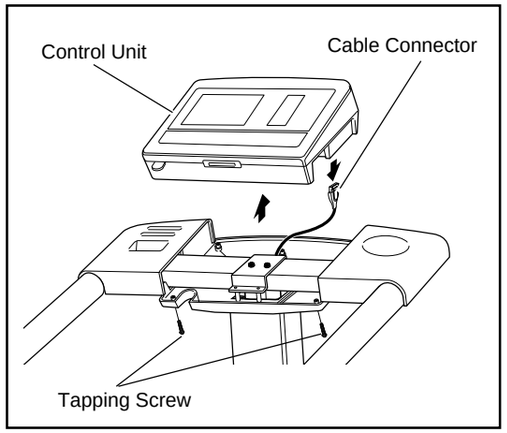


Fig.1

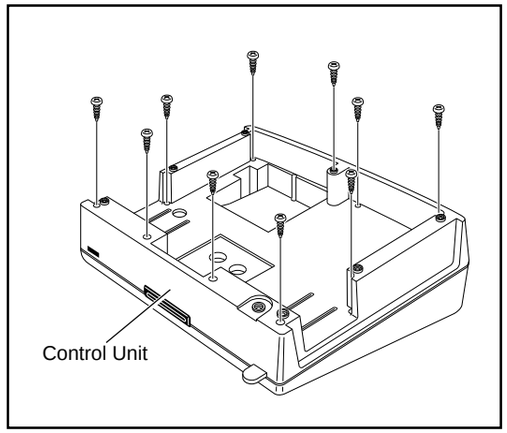


Fig.2

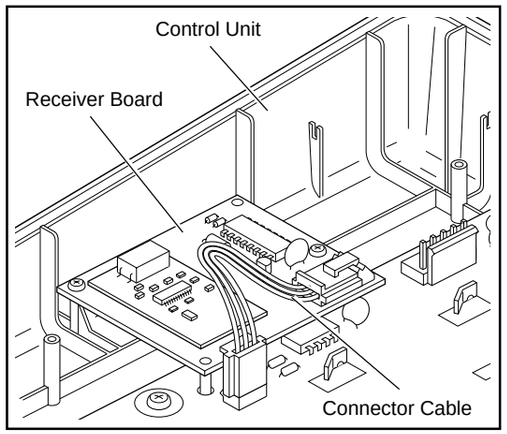
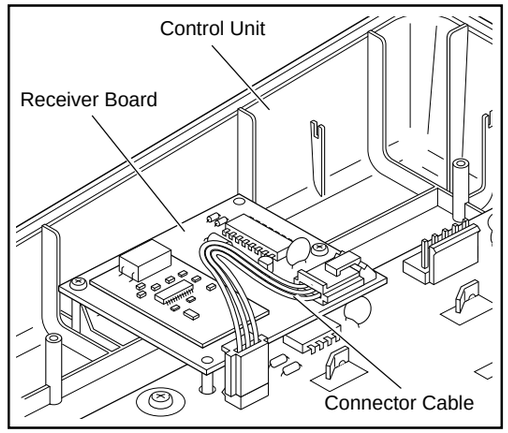
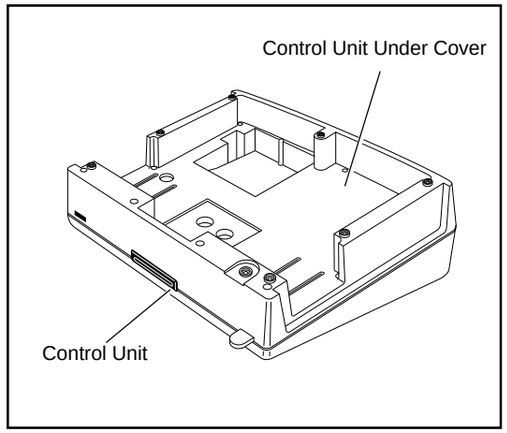
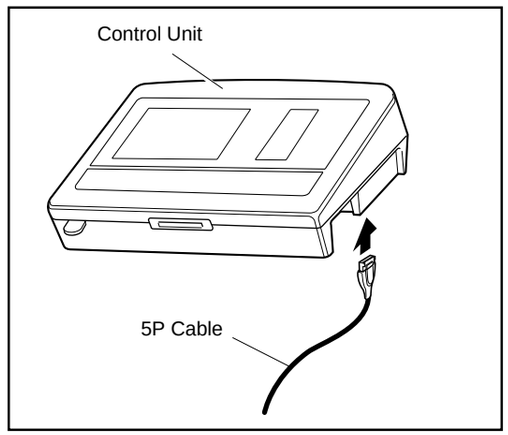
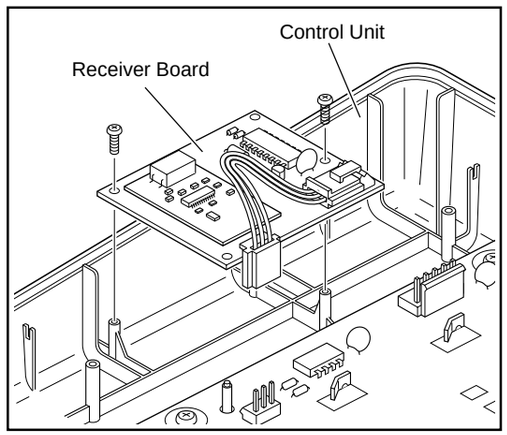


Fig.3

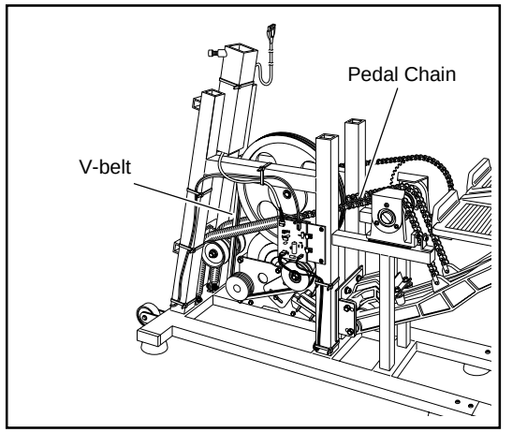
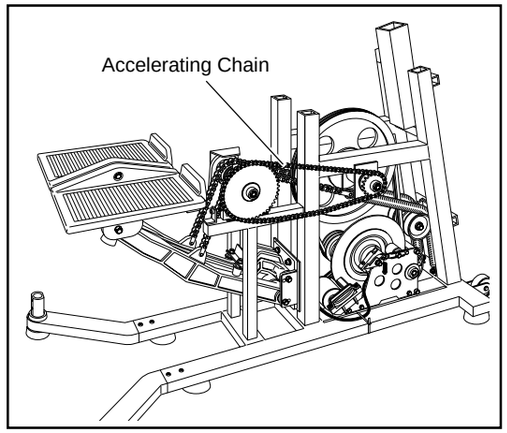
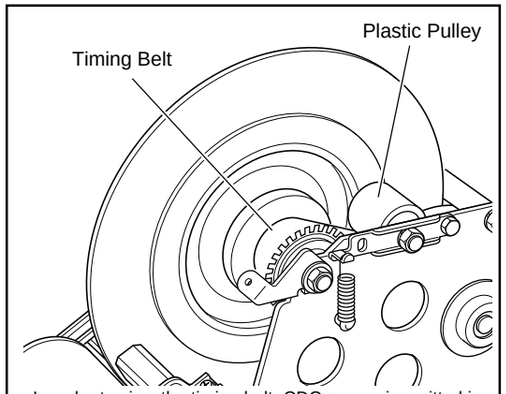
T-4 No Display of Heart Rate (The case with Wireless Chestbelt Pulse Sensor Kit) (2)

Check Method of Causes	Repair Method	Explanation Figures
[2] Checking the Receiver Board (Continued) 6. Replace the connector cable with a new one. (Fig. 4) 7. Connect the 5P cable to the control unit. Note that the rear cover has been detached from the control unit. (Fig. 5) 8. Turn on the power to display the in-training screen (any exercise program). 9. Check if the heart rate will be displayed. [Judgment] ● When the heart rate can be displayed, the previous connector cable might be defective. In this case, you need to take actions as specified in the repair method (c) described at the right. When the heart rate cannot be displayed, proceed to the following checks. 10. Turn off the power of the main unit. 11. Replace the receiver board with a brandnew one. (Fig. 6) 12. Turn on the power to display the in-training screen (any exercise program.) 13. Check if the heart rate will be displayed. [Judgment] ● When the heart rate can be displayed, the previous receiver board might be defective. In this case, you need to take actions as specified in the repair method (d) described at the right. ● When the heart rate cannot be displayed, the control unit might be defective. In this case, you need to take actions as specified in the repair method (e) described at the right.	(c) Replace the connector cable. (d) Replace the receiver board. (e) Replace the control unit. (See [ES-9: Replacing the Control Unit].)	 Fig.4  Fig.5  Fig.6  Fig.7

T-5 Improper Display on Control Unit

Check Method of Causes	Repair Method	Explanation Figures
In case of the problems stated below, check should be made by referring to corresponding “Symptoms of Problems & Causes.” · No display of cadence is possible even when the pedal is rotated. (See T-2.) · No display of pulse rate is possible. (See T-3.) · No display of heart rate is possible. (In the case of the Wireless Chestbelt Pulse Sensor Kit is used.) (See T-4.)		
[1] The displayed language is different from the one described in the Operating Instructions. ● You need to take actions as specified in the repair method (a) described at the right.	(a) Operate the select switch on the back of the control unit. (See [ES-9: Replacing the Control Unit]: ■ ASSEMBLE: 2.)	
[2] Pulse rate, etc. can be displayed, but corresponding graphs cannot be displayed. ● You need to take actions as specified in the repair method (b) described at the right.	(b) Replace the control unit. (See [ES-9: Replacing the Control Unit].)	
[3] Other problems (including breakage of display unit, and unclear display quality) ● You need to take actions as specified in the repair method (c) described at the right.	(c) Replace the control unit. (See [ES-9: Replacing the Control Unit].).	

T-6-1 No Cadence Control (Slower cadence control is not possible.) (1)

Check Method of Causes	Repair Method	Explanation Figures
<1> Checking the Mechanical System Remove the cover of the main unit set, and observe the inner area of the main unit. (See [D-1: Removing the Frame Covers].) 1. Check if the pedal chain has not been broken. (Fig. 1) [Judgment] ● If it has been broken, you need to take actions as specified in the repair method (a) described at the right. 2. Check if the accelerating chain has not been broken. (Fig. 2) [Judgment] ● If it has been broken, you need to take actions as specified in the repair method (b) described at the right. 3. Check if the V-belt has not been broken. (Fig. 1) [Judgment] ● If it has been broken, you need to take actions as specified in the repair method (c) described at the right. 4. Check if the belt (timing belt) at the workload unit has not been broken. (Fig. 3) [Judgment] ● If it has been broken, you need to take actions as specified in the repair method (d) described at the right. 5. Check if the plastic pulley at the workload unit has not been broken. (Fig. 3) [Judgment] ● If it has been broken, you need to take actions as specified in the repair method (e) described at the right.	(a) Replace the pedal chain. (See [MS-3: Replacing the Pedal Chain].) (b) Replace the accelerating chain. (See [MS-2: Replacing the Accelerating Chain].) (c) Replace the V-belt. (See [MS-4: Replacing the V-Belt].) (d) Replace the Workload Unit. (See [MS-1: Replacing the Workload Unit].) (e) Replace the Workload Unit. (See [MS-1: Replacing the Workload Unit].)	 Fig.1  Fig.2  In order to view the timing belt, CDC sensor is omitted in this figure. Fig.3

T-6-1 No Cadence Control (Slower cadence control is not possible.) (2)

Check Method of Causes	Repair Method
<2> Checking the Electrical System [1] Checking the Control Unit 1. Replace the control unit with a new one. (See [ES-9: Replacing the Control Unit].) 2. Check if the cadence will change (to slower rate) under the manual training mode. The check should be made by using a training mode which provides frequent change in cadence. [Judgment] ● When the cadence changes correctly, the previous control unit might be defective. In this case, you need to take actions as specified in the repair method (f) described at the right.	(f) Replace the control unit. (See [ES-9: Replacing the Control Unit].)
When no cadence change is noted, proceed to the following procedures. [2] Checking the 5P Cable 1. Turn off the power of the main unit and remove the cover of the main unit set. (See [D-1: Removing the Frame Covers].) 2. Remove the 5P connector at the power supply board. (Fig. 4) 3. Check any short-circuiting across the two connectors (Terminal 5s) at both ends of the 5P cable. (Fig. 5) When there is a short-circuiting, the tester reading will be zero (0). [Judgment] ● When there is no short-circuiting, the 5P cable might be disconnected. In this case, you need to take actions as specified in the repair method (g) described at the right.	(g) Replace the 5P cable. (See [ES-2: Replacing the 5P Cable].)
When there is short-circuiting, proceed to the following procedures. [3] Checking the 3P Connector 1. Remove the 3P connector at the power supply board. (Fig. 6) 2. Measure the resistance by using a tester across Terminals 1 and 2 on the 3P connector. (Fig. 7) [Judgment] ● When the measured resistance is in the range of 9- to 14-ohms, the 3P connector is normal but the power supply board might be defective. In this case, you need to take actions as specified in the repair method (h) described at the right.	(h) Replace the power supply board. (See [ES-3: Replacing the Power Supply Board].)
● In case the measured resistance is excessively large, the solenoid coil might be defective. In this case, you need to take actions as specified in the repair method (i) described at the right.	(i) Replace the solenoid coil set. (See [ES-5: Replacing the Solenoid Coil Set].)

Explanation Figures

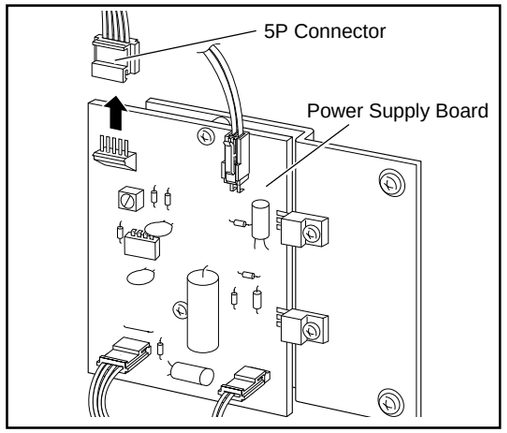


Fig.4

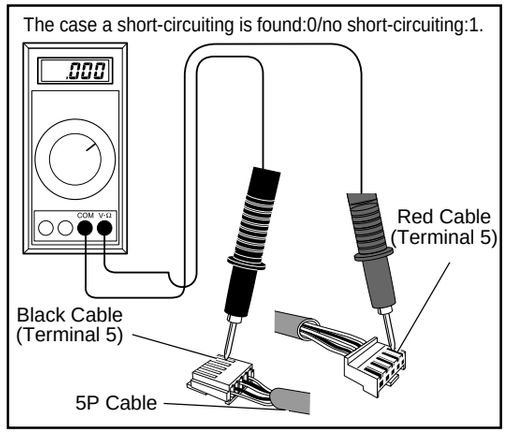


Fig.5

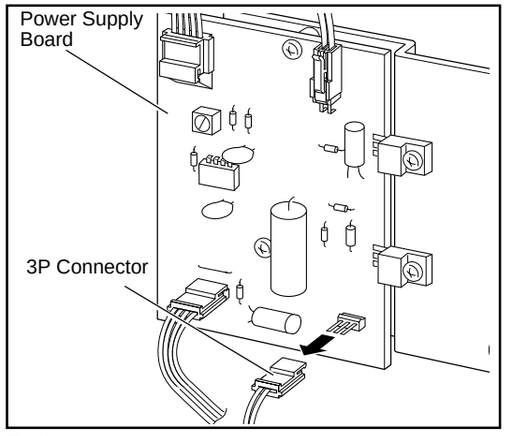


Fig.6

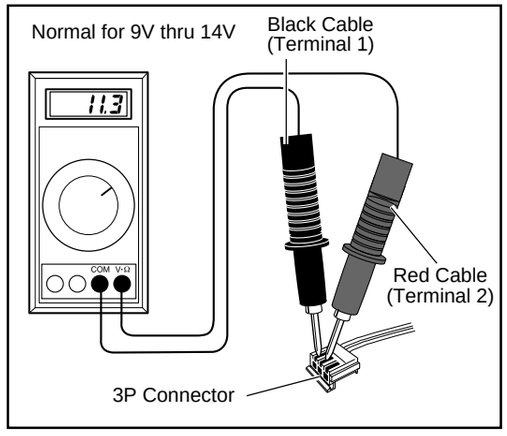


Fig.7

T-6-2 No Cadence Control (Faster cadence control is not possible.) (1)

Check Method of Causes	Repair Method	Explanation Figures
[1] Checking the Control Unit 1. Replace the control unit with a new one. (See [ES-9: Replacing the Control Unit].) 2. Check if the cadence can be changed (to faster rate) under the manual training mode. The check should be made by using a training mode which provides frequent change in cadence. [Judgment] ● When the cadence changes correctly, the previous control unit might be defective. In this case, you need to take actions as specified in the repair method (a) described at the right. When no cadence change is noted, proceed to the following procedures.	(a) Replace the control unit with a new one. (See [ES-9: Replacing the Control Unit].)	
[2] Checking the 5P Cable 1. Turn off the power of the main unit, and remove the cover of the main unit set. (See [D-1: Removing the Frame Covers].) 2. Remove the 5P connector at the power supply board. (Fig. 1) 3. Check any short-circuiting across the two connectors (Terminal 1s) at both ends of the 5P cable. (Fig. 2) When there is a short-circuiting, the tester reading will be zero (0). [Judgment] ● When there is no short-circuiting, the 5P cable might be disconnected. In this case, you need to take actions as specified in the repair method (b) described at the right. When there is short-circuiting, proceed to the following procedures.	(b) Replace the 5P cable. (See [ES-2: Replacing the 5P Cable].)	
[3] Checking the 3P Connector 1. Remove the 3P connector at the power supply board. (Fig. 3) 2. Measure the resistance by using a tester across Terminals 1 and 2 on the 3P connector. (Fig. 4) [Judgment] ● When the measured resistance is in the range of 9- to 14-ohms, the 3P connector is normal but the power supply board might be defective. In this case, you need to take actions as specified in the repair method (c) described at the right. ● In case the measured resistance is excessively large, the solenoid coil might be defective. In this case, you need to take actions as specified in the repair method (d) described at the right.	(c) Replace the power supply board. (See [ES-3: Replacing the Power Supply Board].) (d) Replace the solenoid coil set. (See [ES-5: Replacing the Solenoid Coil Set].)	

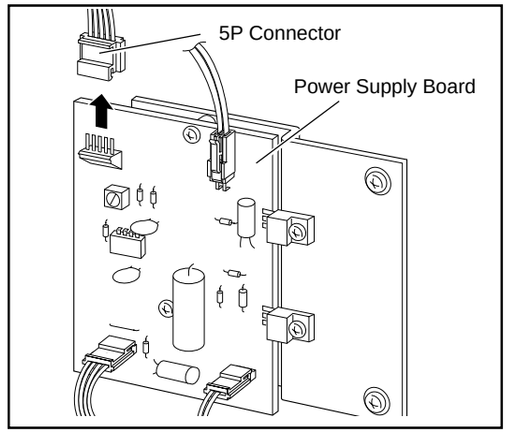


Fig.1

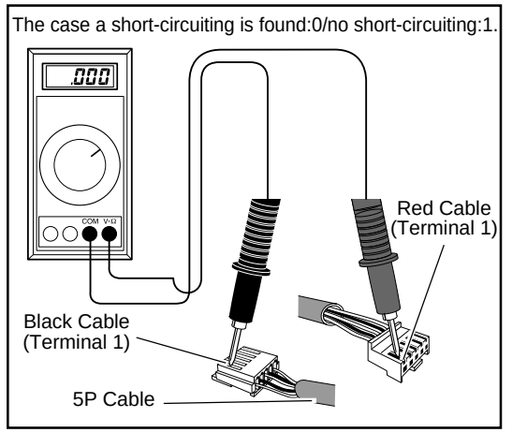


Fig.2

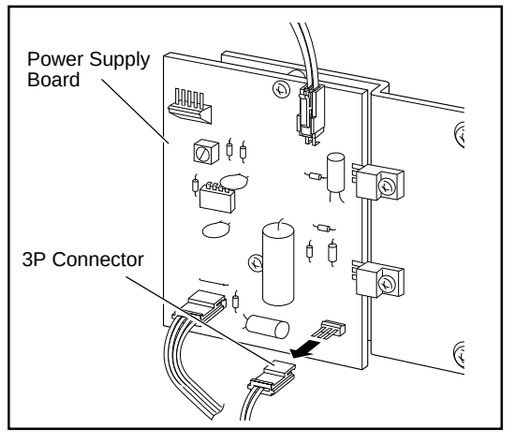


Fig.3

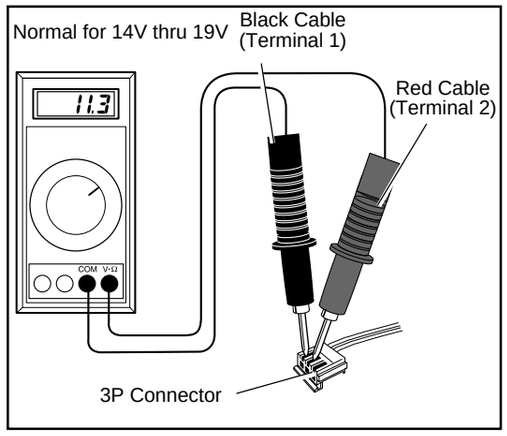


Fig.4

T-6-2 No Cadence Control (Faster cadence control is not possible.) (2)

Check Method of Causes

[4] Checking the CDC Sensor

1. Replace the CDC sensor cable with a brandnew one.
   - A. Detach the CDC sensor cable from the CDC sensor set. (Fig. 5)
   - B. Disconnect the 4P connector at the power supply board, and disconnect the CDC sensor cable. (Fig. 6)
   - C. Connect the 4P connector of the new CDC sensor cable to the connectors of both the CDC sensor set and the power supply board. (Figs. 5 and 6)
2. Connect the 5P cable to the power supply board, and check the voltage. (Fig. 7)
   - A. Turn on the power of the main unit.
   - B. Slowly move the pedal, while checking the voltage by using a tester across Terminal 1 and Terminal 4 of the cable connector (5P connector at the side of control unit connection) of the 5P cable. (Fig. 8)

     Terminal 1 is for plus (+) and Terminal 4 is for minus (-).
   - C. When the voltage frequently changes between approx. 5V and 0V, the CDC sensor is all right.

[Judgment]

- When the voltage is found to be correct, the CDC sensor cable has been disconnected. In this case, you need to take actions in the repair method (e) described at the right.

When the voltage is not correct, proceed to the procedures on the next page.

Repair Method

(e) Replace the CDC sensor cable.

(See [ES-7: Replacing the CDC Sensor Cable].)

Explanation Figures

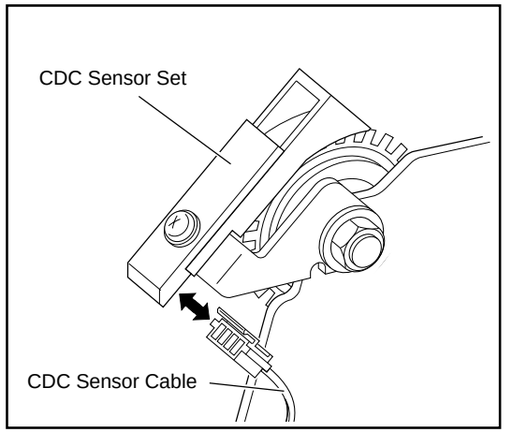


Fig.5

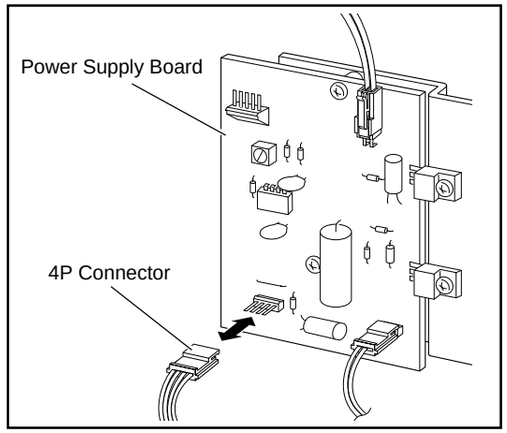


Fig.6

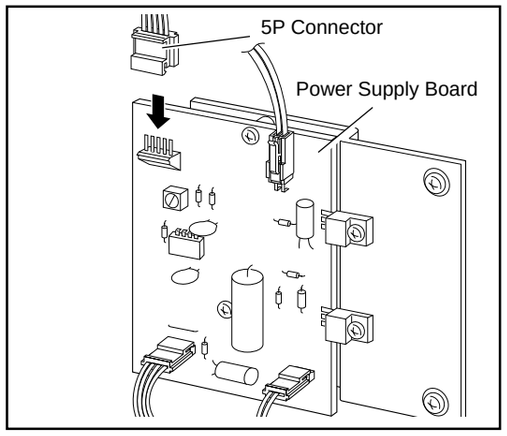


Fig.7

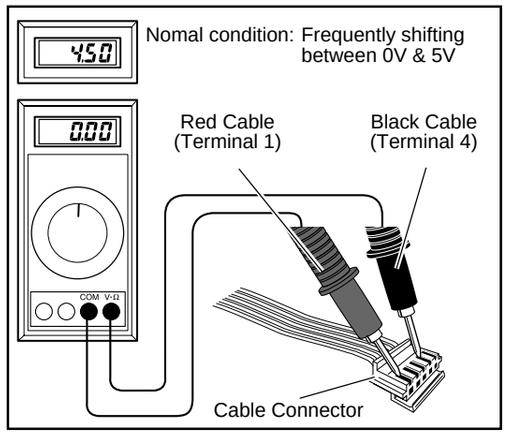


Fig.8

T-6-2 No Cadence Control (Faster cadence control is not possible.) (3)

Check Method of Causes	Repair Method	Explanation Figures

[4] Checking the CDC Sensor (Continued)

3. Remove the CDC sensor set.
   - A. Detach the CDC sensor set by loosening screws. (Fig. 9)
   - B. Detach the CDC sensor cable from the CDC sensor set.
4. Rotate the CDC magnet to check if it is damaged or clogged. (Fig. 10)

[Judgment]

- Damaged CDC magnet will be the cause of the problem. In this case, you need to take actions as specified in the repair method (f) as described at the right.

(f) Replace the workload unit.
(See [MS-1: Replacing the Workload Unit].)

5. When the CDC magnet is clogged, remove dust from the magnet.
6. Install the CDC sensor set.
   - A. First, connect the CDC sensor set and the CDC sensor cable, and then mount it to the CDC sensor metal base. (Fig. 9)
   - B. Rotate the CDC sensor around the screw, and adjust the sensor so that it can be positioned in parallel with the CDC magnet with the condition that the sensor does not touch the magnet. (Fig. 11)
7. Connect the 5P cable to the power supply board, and check the voltage. (Fig. 12)
   - A. Turn on the power of the main unit.
   - B. Slowly move the pedal while measuring the voltage across the terminals 1 and 4 at the cable connector of the 5P cable (5P connector at the side of the control unit connection). (Fig. 13)

     Terminal 1 is for plus (+) and Terminal 4 is for minus (-).
   - C. The CDC sensor is working fine when the voltage frequently changes between approx. 5V and 0V.

[Judgment]

- When the voltage check is found to be all right, the possible cause is the clogging of the CDC magnet or incorrect positioning of the CDC sensor. In this case, you need to take actions as specified in the repair method (g) as described at the right.

(g) Present status is correct. Go ahead to assemble Ergociser.

When the voltage is not correct, proceed to the checking procedures described on the next page.

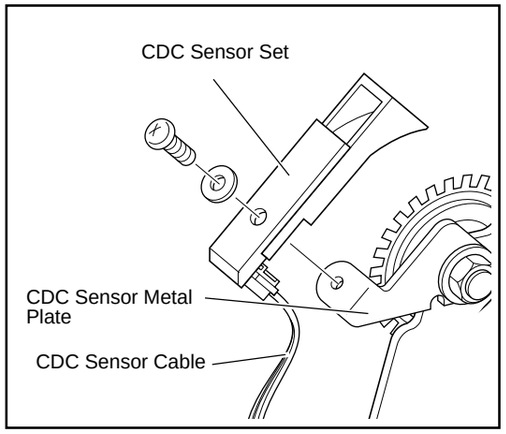


Fig.9

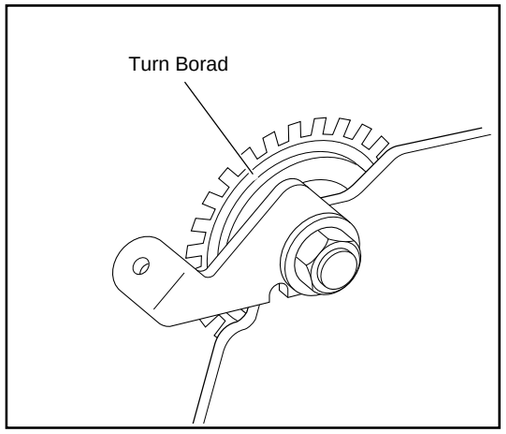


Fig.10

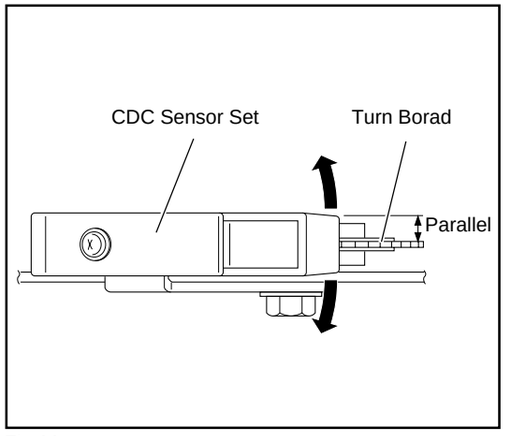


Fig.11

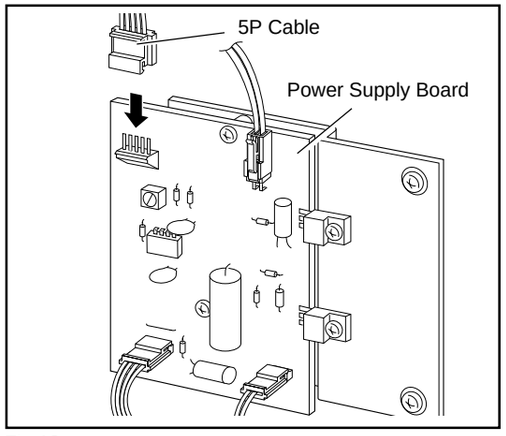


Fig.12

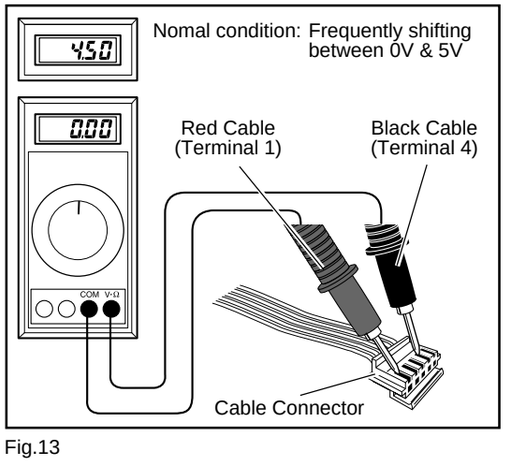


Fig.13

T-6-2 No Cadence Control (Faster cadence control is not possible.) (4)

Check Method of Causes	Repair Method	Explanation Figures

[4] Checking the CDC Sensor (Continued)

8. Replace the CDC sensor set with a new one.
   - A. Remove the CDC sensor set by loosening screws. (Fig. 14)
   - B. Detach the CDC sensor cable from the CDC sensor set.
   - C. First, connect the CDC sensor set and the CDC sensor cable, and then mount it to the CDC sensor metal base. (Fig. 14)
   - D. Rotate the CDC sensor around the screw, and adjust the sensor so that it can be positioned to parallel with the CDC magnet with the condition that the sensor does not touch the magnet. (Fig. 15)
9. Connect the 5P cable to the power supply board, and check the voltage. (Fig. 16)
   - A. Turn on the power of the main unit.
   - B. Slowly move the pedal while measuring the voltage across the terminals 1 and 4 at the cable connector of the 5P cable (5P connector at the side of the control unit connection). (Fig. 17)

     Terminal 1 is for plus (+) and Terminal 4 is for minus (-).
   - C. The CDC sensor is working fine when the voltage frequently changes between approx. 5V and 0V.

[Judgment]

- When the voltage check is found to be all right, the possible cause is the breakage of the CDC sensor. In this case, you need to take actions as specified in the repair method (h) as described at the right.
- When the voltage is incorrect, the possible cause is the breakage of the power supply board. In this case, you need to take actions as specified in the repair method (i) as described at the right.

(h) Replace the CDC sensor set.

(See [ES-6: Replacing the CDC Sensor Set].)

(i) Replace the power supply board.

(See [ES-3: Replacing the Power Supply Board]).

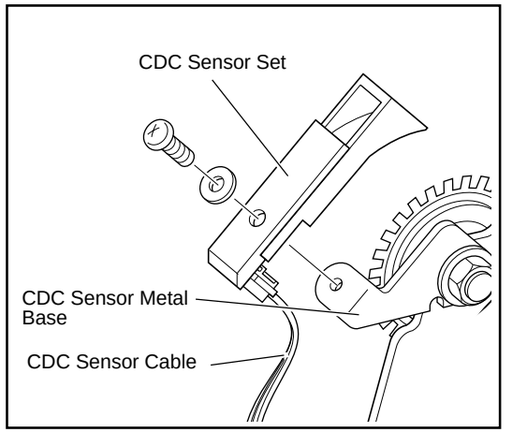


Fig.14

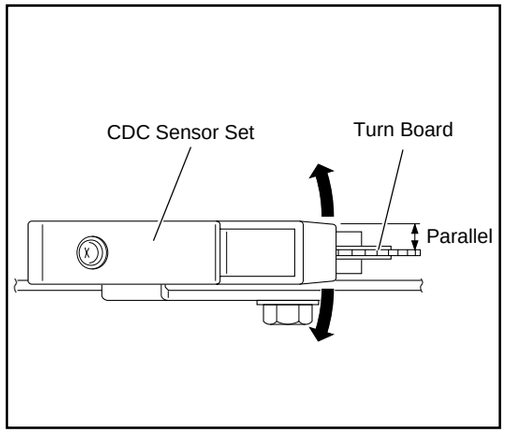


Fig.15

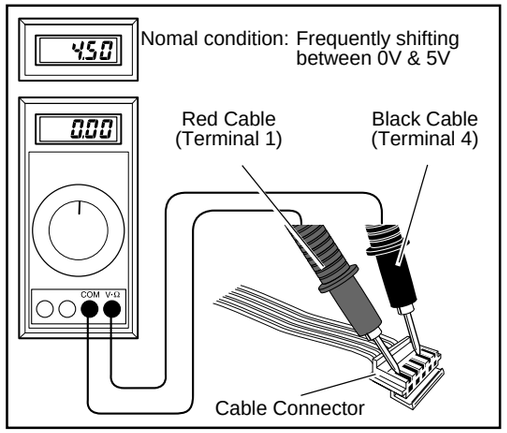
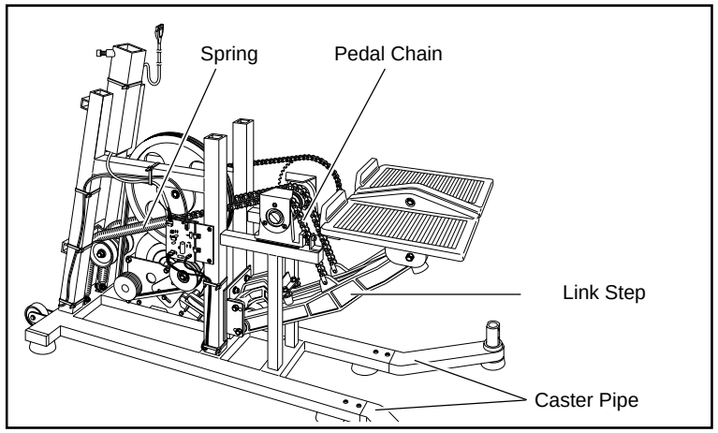
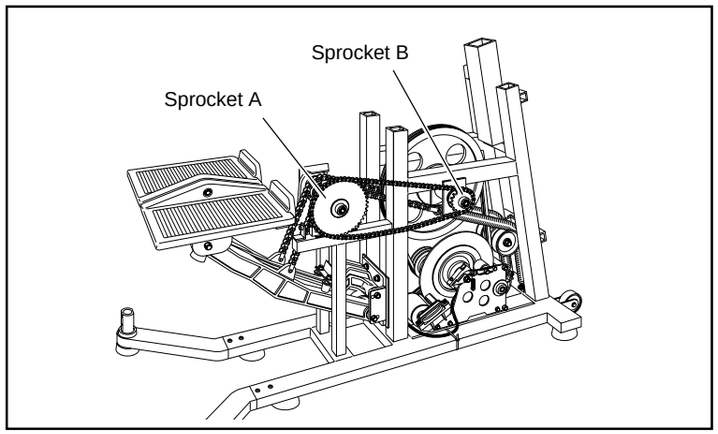
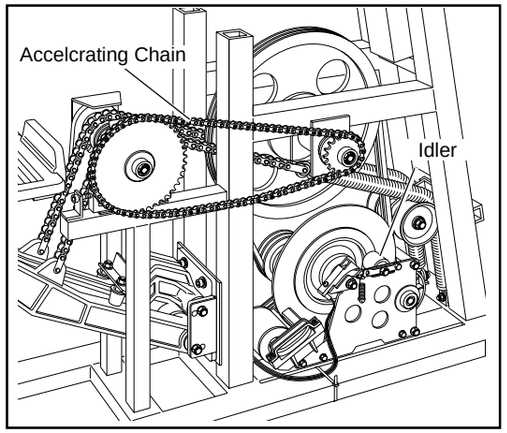
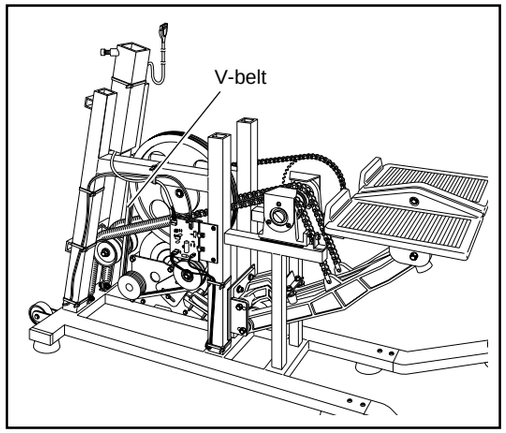
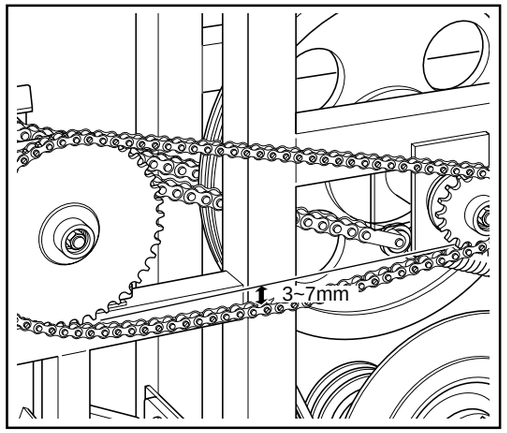


Fig.16

T-7 Pedal will not be Restored to Original Position

Check Method of Causes	Repair Method	Explanation Figures
[1] Checking the Linkstep 1. Check if the linksetp has not been jammed in the rear leg. [Judgment] ● When the linkstep is jammed in the rear leg, you need to take actions as specified in the repair method (a) described at the right.	(a) Replace the linkstep set. (See [MS-12: Replacing the Linkstep Set].)	 Fig.1
[2] Checking the Inner Area of the Main Unit 1. Remove the cover of the main unit set, and observe the inner area of the main unit. (See [D-1: Removing the Frame Covers].) 2. Check if the spring has not been detached or broken. (Fig. 1) [Judgment] ● When the spring is detached, you need to take actions as specified in the repair method (b) described at the right. ● When the spring is broken, you need to take actions as specified in the repair method (c) described at the right.	(b) Mount the spring correctly. (See [MS-10: Replacing the Spring].) (c) Replace the spring. (See [MS-10: Replacing the Spring].)	
3. Check if the pedal chain has not been detached or broken. (Fig. 1) [Judgment] ● When the pedal chain is detached, you need to take actions as specified in the repair method (d) described at the right. ● When the pedal chain is broken, you need to take actions as specified in the repair method (e) described at the right.	(d) Mount the pedal chain correctly. (See [MS-3: Replacing the Pedal Chain].) (e) Replace the pedal chain. (See [MS-3: Replacing the Pedal Chain].)	
When no problems are found in the above procedures 2 and 3, proceed to the following checks. 4. By rotating the sprocket B, check if either of the sprocket A or B has not been locked. For this check, be sure not to give excessive force to rotate the sprocket. (Fig. 2) [Judgment] ● When the sprocket B has been locked, you need to take actions in the repair method (f) described at the right. ● When the sprocket A cannot be rotated, you need to take actions in the repair method (g) described at the right.	(f) Replace the sprocket B. (See [MS-8: Replacing the Sprocket].) (g) Replace the sprocket A. (See [MS-8: Replacing the Sprocket].)	 Fig.2

T-8-1 Unusual Noise (Continuous and Increasing) (1)

Check Method of Causes	Repair Method	Explanation Figures
Note that checks stated in this section should be carried out on all items. <1> Noise is continuous and increasing. 1. Remove the frame cover. (See [D-1: "Removing the Frame Covers."]) 2. Check if the idler has been worn out. (Fig. 1) [Judgment] ● When the idler is worn out, you need to take actions as specified in the repair method (a) described at the right. 3. Check if the V-belt has been worn out. (Fig. 2) [Judgment] ● When the V-belt is worn out, you need to take actions as specified in the repair method (a) described at the right. 4. Check if the accelerating chain has been excessively tensioned. (Fig. 1) A. Rotate the chain and find the most tensioned status of the chain. B. When the chain is correctly tensioned, the slagging should be 3mm to 7mm under the most tensioned status of the chain. [Judgment] ● When the chain is excessively tensioned, you need to take actions as specified in the repair method (c) described at the right. To be continued on the next page.	(a) Replace the idler set. (See [MS-5: Replacing the Idler Set].) (b) Replace the V-belt. (See [MS-4: Replacing the V-Belt].) (c) Adjust the tension of the chain. (See [MS-2: Replacing the Accelerating Chain].)	 Fig.1  Fig.2  Fig.3

T-8-1 Unusual Noise (Continuous and Increasing) (2)

Check Method of Causes	Repair Method
5. Check if the copper disk plate of the workload unit does not contact the solenoid coil (core slit). (Figs. 4 and 5) [Judgment] ● If the copper disk plate contacts the solenoid coil, you need to take actions as specified in the repair method (d) described at the right. If the procedure in repair method (d) does not rectify the contacting problem, then proceed to the repair method (d).	(d) Make positional adjustment of the solenoid coil. (See [ES-4: Correcting the Position of Solenoid Coil].)
6. Check if the side of the timing belt does not contact the adjacent parts. (Fig. 6) [Judgment] ● If it contacts any parts, you need to take actions as specified in the repair method (f) described at the right.	(e) Replace the workload unit. (See [MS-1: Replacing the Workload Unit].)
The following checks should be done after the repair or adjustment, which is required during the above check procedures, has been completed.	
7. Rotate the pedal to check if unusual noise still occurs. [Judgment] ● When noise is noted at around the V-belt tension pulley, the bearings of this pulley might be defective. In this case, you need to take actions as specified in the repair method (g) described at the right. (Fig. 7) ● When noise is available at the accelerating chain, you need to take actions as specified in the repair method (h) described at the right. (Fig. 8) ● In case noise is heard at the areas where repair or adjustment has been given in the procedures performed above, the repair or adjustment is considered to be insufficient. Apply repair or adjustment again.	(f) Replace the workload unit. (See [MS-1: Replacing the Workload Unit].) (g) Replace the V-belt tension pulley. (See [MS-7: Replacing the V-Belt Tension Pulley].) (h) Apply grease to the accelerating chain. (Fig. 9)

Explanation Figures

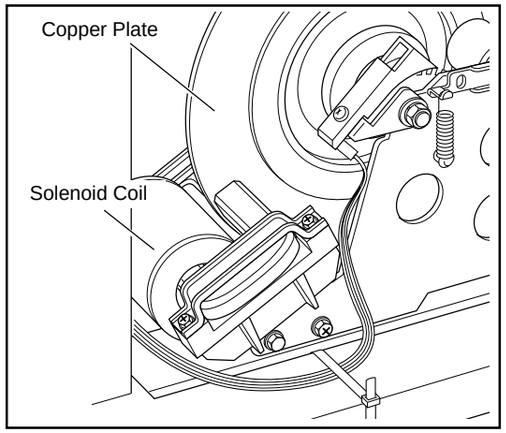


Fig.4

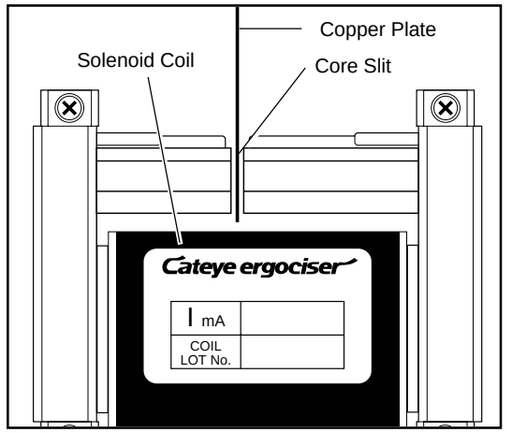


Fig.5

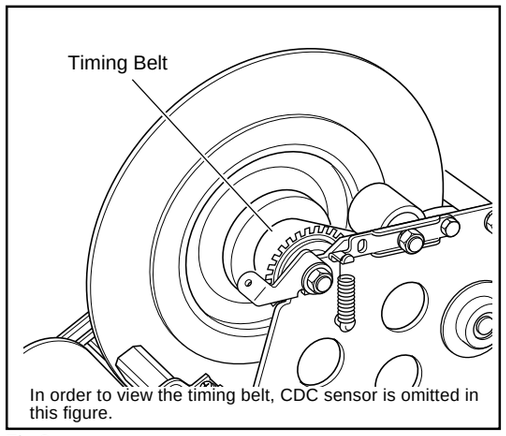


Fig.6

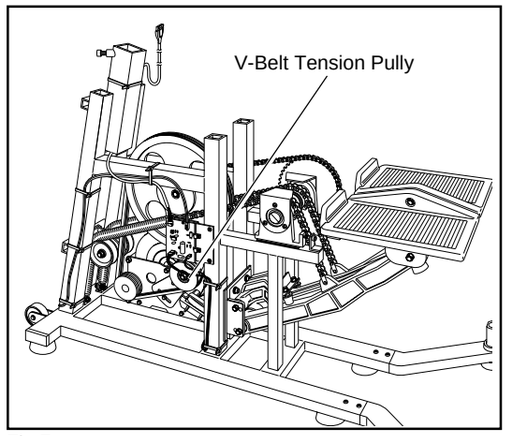


Fig.7

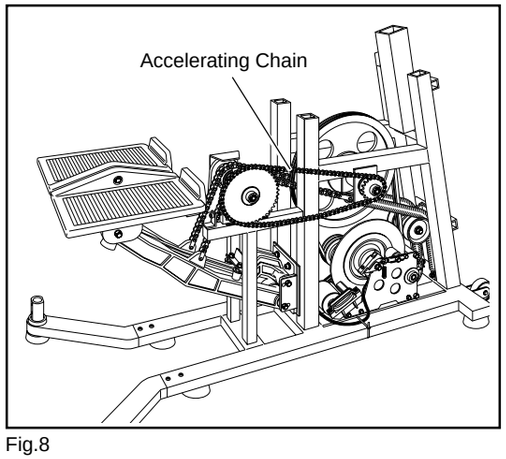
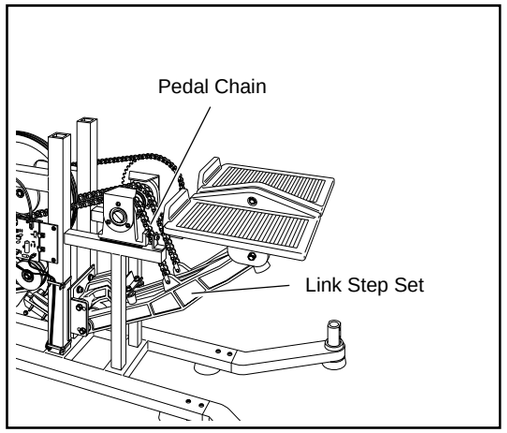
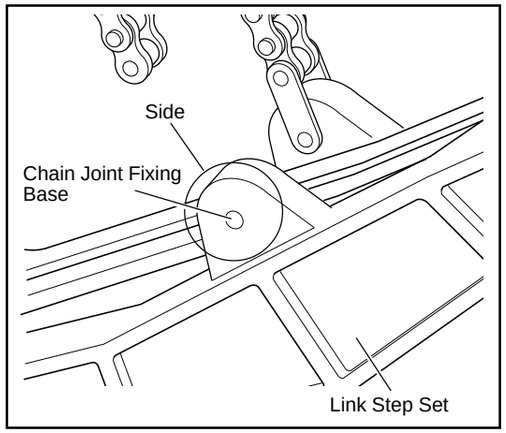


Fig.8

T-8-2 Unusual Noise (Unusual Noise Synchronized with Pedal Rotation)

Check Method of Causes	Repair Method	Explanation Figures
<3> Unusual Noise Synchronized with Pedal Rotation 1. Contacting with adjacent parts may be occurring at the following areas: • Pedal Chain • Linkstep Set ● You need to take actions as specified in the repair method (a) described at the right.	(a) Apply grease in the following procedures. 1. Remove the frame cover. (See [D-1: Removing the Frame Covers].) 2. Apply grease in the following areas. (Figs. 1 and 2) • Pedal Chain • Linkstep Set	 Fig.1  Fig.2

D-1 Removing the Frame Covers

When any repairs or adjustments of parts within the frame are required, remove the frame covers in the following procedures.

1. Disassemble the entire system to the main unit set only.

   (See [Starting up 1: Let's start with Assembling] of the Cateye Ergociser Model EC-5000 Operating Instructions.)

   The disassembling procedures should be in the reverse way of the assembling procedures stated in the Operating Instructions. You need not remove the rear leg.

2. Remove six fixing screws (three on either side) on the center cover, and remove the center cover by lifting it upward. (Fig. 1)
3. Remove the inlet cover by loosening four screws. (Fig. 2)
4. Remove 14 screws (7 on either side) on the frame cover. (Fig. 1)
5. Detach the left-side frame cover.

   [NOTE]Since the front part of the frame cover engages with the front leg, the frame cover may be damaged unless it is detached in the correct direction. As depicted, you should first tilt the frame frontward, making the engaged portion being the fulcrum. (Fig. 4)

6. Detach the moles (three parts).
7. Remove the right-side frame cover, paying attention to the [NOTE] in above procedure 5.

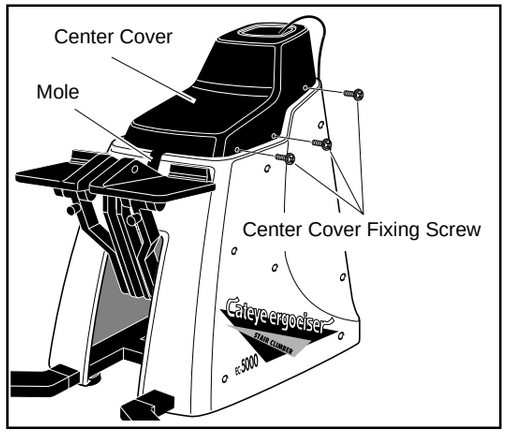


Fig.1

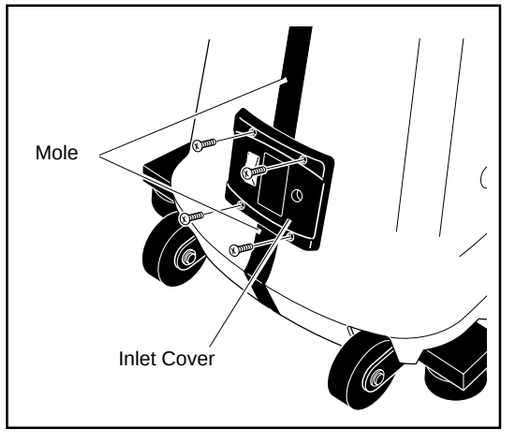


Fig.2

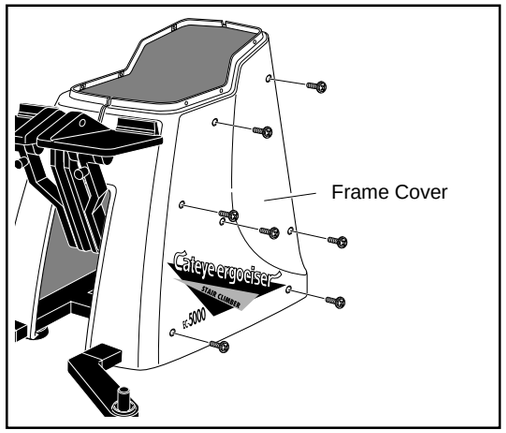


Fig.3

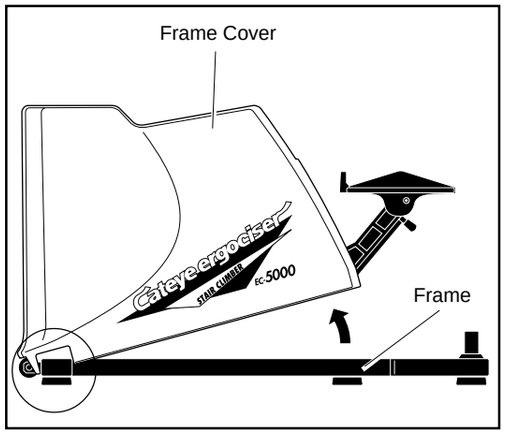


Fig.4

D-2 Mounting the Frame Covers

1. Check if the direction of the speed nuts on the 14 frame metals (seven pieces at either side) is set as depicted. (Fig. 1)

   If some nuts are set in wrong directions, set them in the correct direction.
2. Put the frame cover on the frame, by hooking it at the front leg. (Fig. 2)
3. Using frame cover fixing screws (7 at either side), fix the right and left frame covers. (Fig. 3)
4. Insert the mole in between the right and left frame covers. For the pedal side, the mole should be inserted from the top. (Fig. 4)

   For the front side, the mole should be divided into up and down side and inserted at the inlet area. (Figs. 5 and 6)
5. Mount the inlet cover by using four screws. (Fig. 7)
6. Put the center cover. (Fig. 3)

   During this procedure, the 5P cable should be put through the hole at the front of the center cover, and pull the tip of the cable out of the center cover.
7. Fix the center cover by using center cover fixing screws (3 pieces at either side). (Fig. 3)
8. Assemble the entire Ergociser.

   (See [Starting up 1: Let's start with Assembling] of the Cateye Ergociser Model EC-5000 Operating Instructions.)

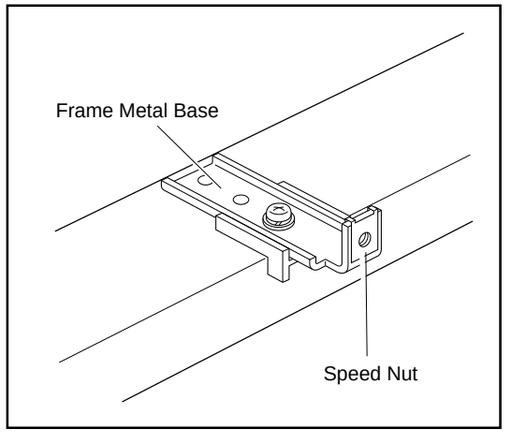


Fig.1

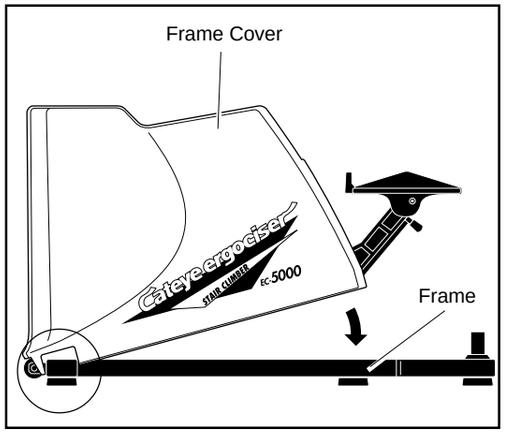


Fig.2

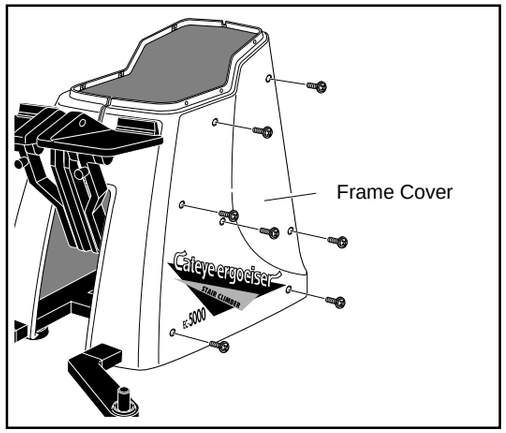


Fig.3

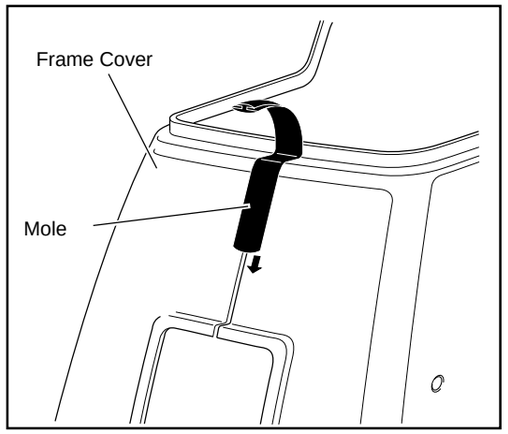


Fig.4

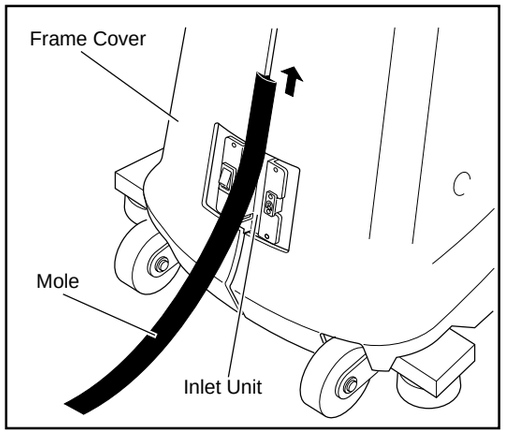


Fig.5

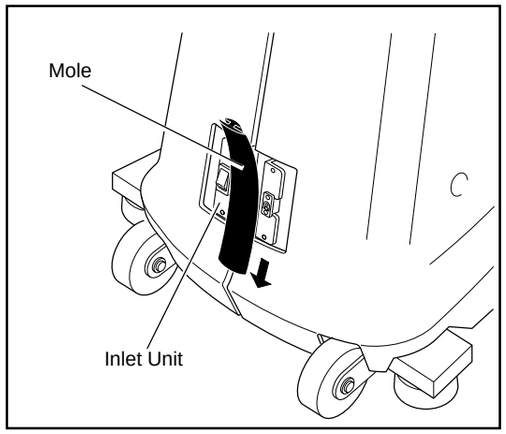


Fig.6

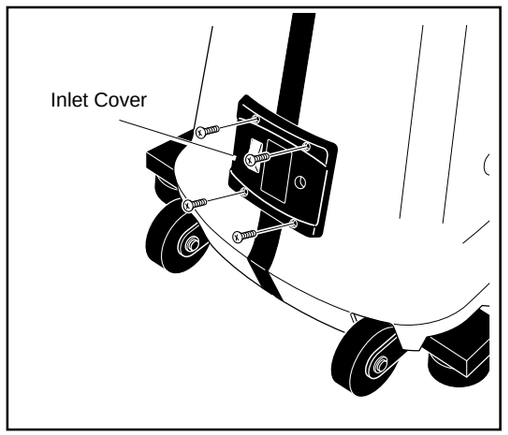


Fig.7

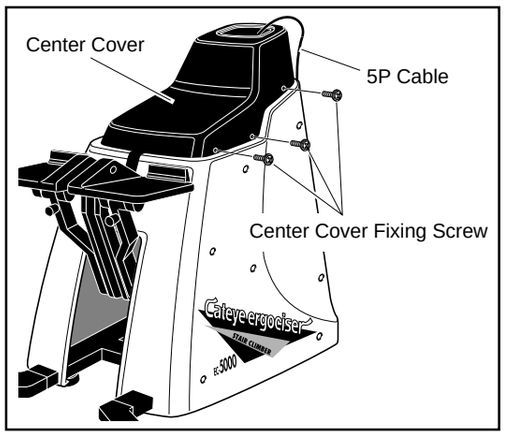


Fig.8

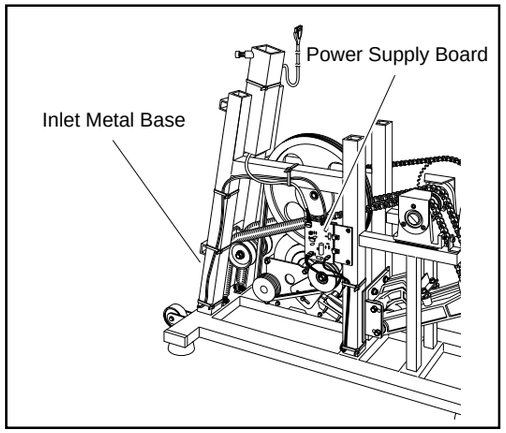
ES-1 Replacing the Wiring within Frame (Inlet Metal Base Set)

■ REMOVAL

1. Remove the frame cover.
   (See [D-1: Removing the Frame Covers].)
2. Remove the 2P connector at the power supply board. (Fig. 1)
3. Detach the inlet metal base and inlet support metal by loosening two screws. (Fig. 2)
4. Cut the cable holder with a nipper or the like. (Fig. 3)

■ ASSEMBLE

1. Mount a new inlet metal base on the frame by using the inlet support metal base and two screws. (Fig. 2)
2. Connect the 2P connector to the power supply board. (Fig. 1)
3. Perform tests on the parts as specified for mounting and replacing the parts.
   [Tests]
   A. Connect the control unit and the 5P cable without mounting the cover. (Fig. 4)
   B. Turn on the power of the main unit, and check that the display on the control unit appears.
   C. Then, turn off the power and detach the 5P cable from the control unit.
4. By using a cable holder, fix the power cable and the 5P cable to the frame. (Figs. 3 and 4)
   As depicted in Fig. 1, the power cable and the 5P cable should be bundled together before fixing them.
5. Assemble the frame cover.
   (See [D-2: Mounting the Frame Covers].)



General Figure

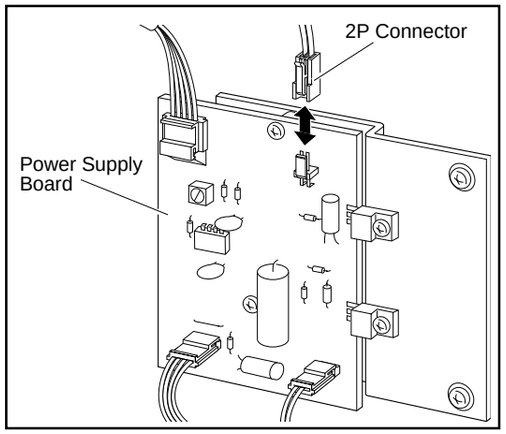


Fig.1

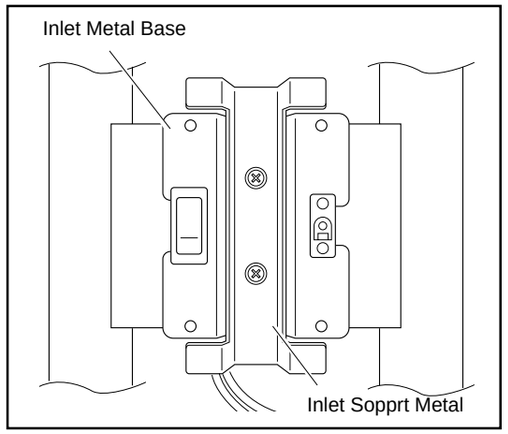


Fig.2

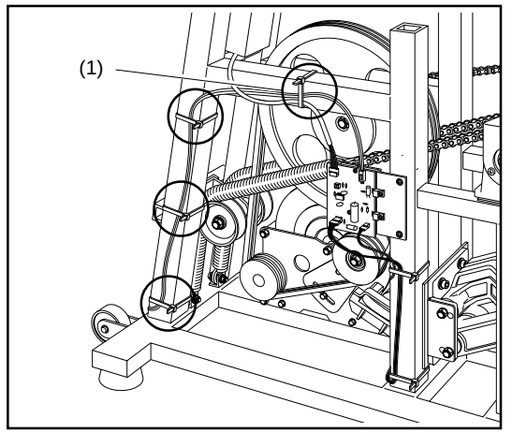


Fig.3

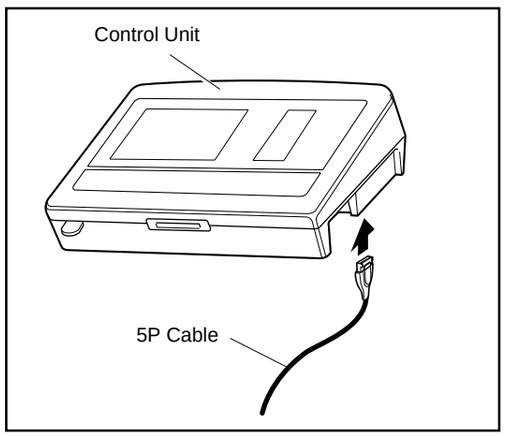


Fig.4

ES-2 Replacing the 5P Cable

■ REMOVAL

1. Remove the frame cover.
   (See [D-1 "Removing the Frame Covers."])
2. Detach the 5P connector at the power supply board. (Fig. 1)
3. Cut the cable holder which fixes the 5P cable to the frame, and detach the 5P cable.

■ ASSEMBLE

1. Put a mark at a place approx. 93cm from the control unit side cable connector of the 5P cable. (Fig. 2)
2. Connect the 5P connector at the end of the 5P cable to the power supply board. (Fig. 3)
3. Perform tests on the parts as specified for mounting and replacing the parts.
   [Tests]
   A. Connect the control unit and the 5P cable without mounting the cover. (Fig. 4)
   B. Turn on the power of the main unit, and check that the display on the control unit appears.
   C. Then, turn off the power and detach the 5P cable from the control unit.
4. Fix the 5P cable with a cable holder. (Fig. 5)
   Also, fix the 5P cable to the frame so that the marked position should align with the upper edge of the frame.
   As depicted in Fig. 1, the 5P cable should be fixed together with the power cable.
5. Assemble the frame cover.
   (See [D-2: Mounting the Frame Covers].)

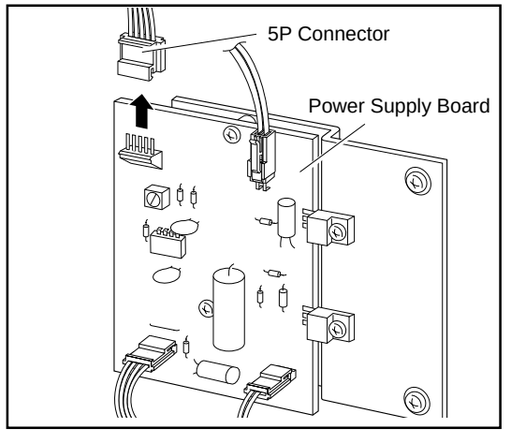


Fig.1

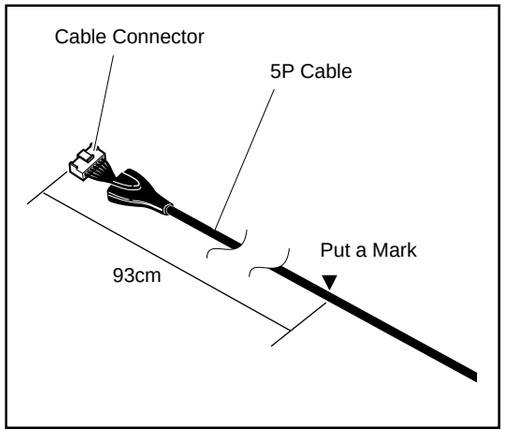


Fig.2

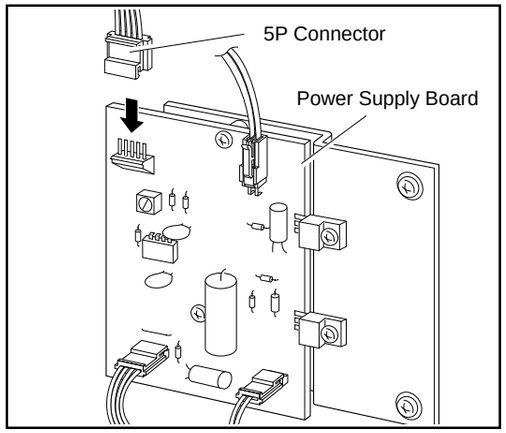


Fig.3

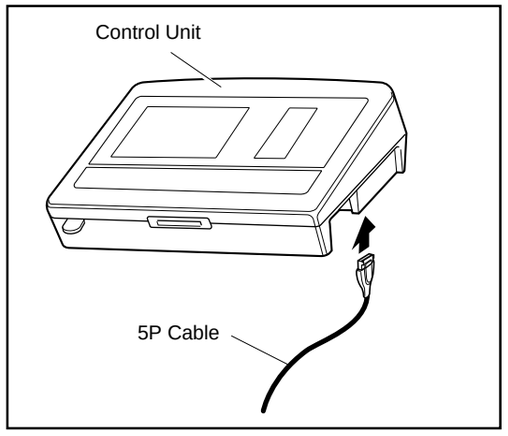


Fig.4

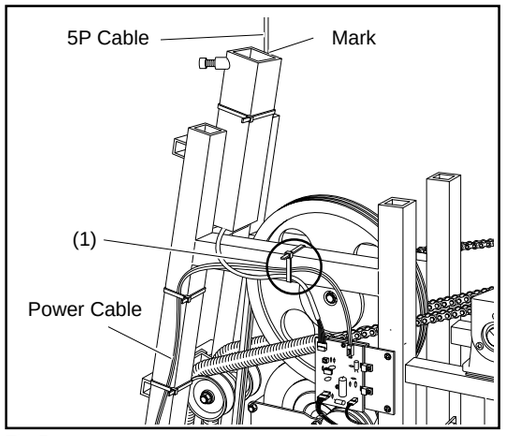


Fig.5

ES-3 Replacing the Power Supply Board

■ REMOVAL

1. Remove the frame cover. (See [D-1: Removing the Frame Covers].)
2. Remove all four connectors which are connected to the power supply board. (Fig. 1)
3. Loosen the two screws which fix the power supply board to remove the board. (Fig. 1)

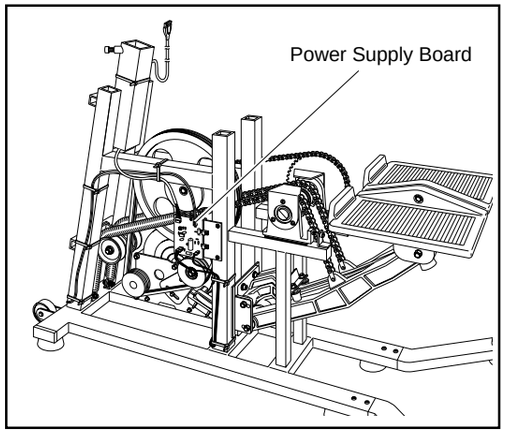
■ ASSEMBLE

1. Securely fix the new power supply board by using two fixing screws. (Fig. 1)
2. Connect three connectors, 2P, 4P and 5P. (Fig. 1)
3. Perform tests on the parts as specified for mounting and replacing the parts.

   [Tests]

   A. Connect the control unit and the 5P cable without mounting the cover. (Fig. 2)
   B. Turn on the power of the main unit, and rotate the pedal under the manual training mode. Check that the cadence of the control unit will change.
   C. Then, turn off the power and detach the 5P cable from the control unit.
4. Assemble the frame cover.

   (See [D-2: Mounting the Frame Covers].)



General Figure

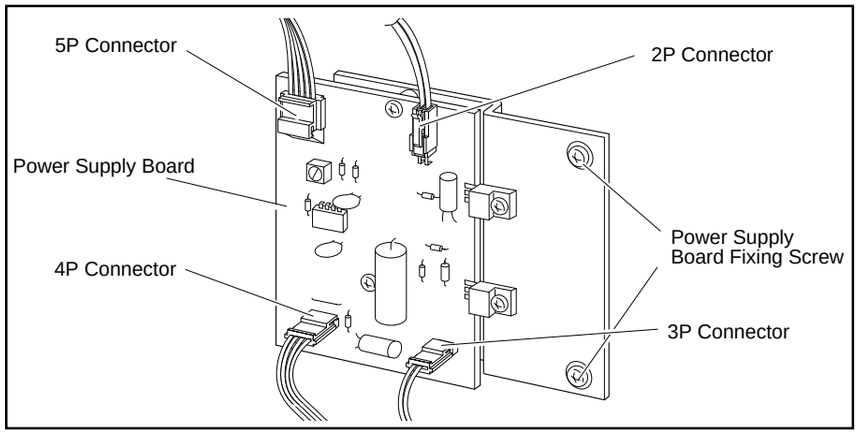


Fig.1

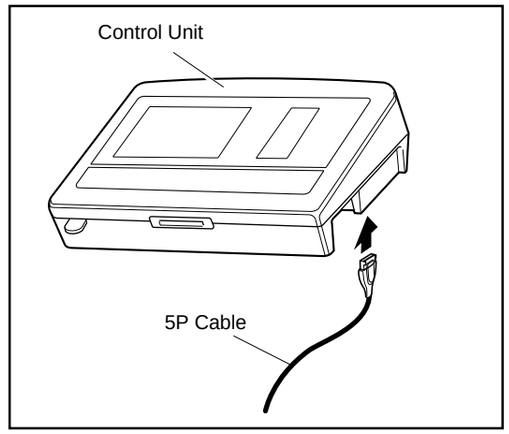


Fig.2

ES-4 Correcting the Position of Solenoid Coil

[NOTE] When proceeding to the correction of solenoid coil, be sure not to damage the copper disk plate.

The work stated in this section should be carried out by two persons.

In case the correction of solenoid coil position cannot be performed through the following procedures, or when the copper disk plate is significantly deformed, the entire workload unit should be replaced.

(See [MS-1: Replacing the Workload Unit].)

■ Preparatory Work

1. Detach the frame cover.

   (See [D-1: Removing the Frame Covers].)

2. Loosen the adjust screw of the V-belt tension pulley and move the V-belt tension pulley to loosen the V-belt. (Fig. 1)

■ Adjusting the Position of Solenoid Coil

1. Check the area contacting the solenoid coil (core slit) by slowly rotating the copper disk plate with your hands. (Figs. 2 and 3)
2. Perform the positional correction of the solenoid coil in the following procedures.

   A. Loosen the four screws evenly which fix the solenoid coil. (Fig. 2)

      Note that screw lock paint has been applied to these screws.

   B. Rotate the solenoid coil, and adjust it so that it will not contact the copper disk plate. (Figs. 2 and 3)

      Also, by giving the copper disk plate one full rotation, make sure it does not contact the coil at any portion.

   C. Evenly tighten the four screws to firmly fix the solenoid coil.

   [NOTE] Be sure to tighten the four screws evenly, as otherwise the position of the solenoid coil may be shifted.

   D. Apply screw lock paint to the four screws.

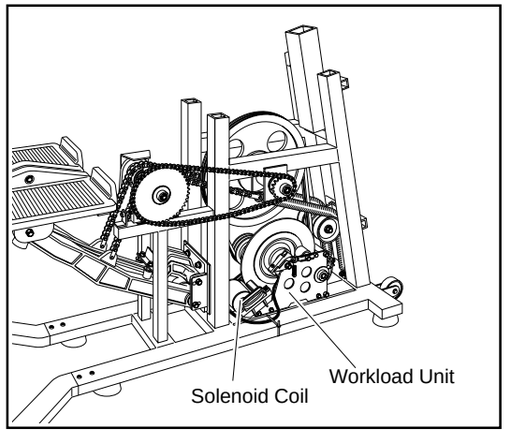
■ Finishing Work

1. Adjust the position of the V-belt tension pulley and give tension to the V-belt.

   (See [MS-4: Replacing the V-Belt]: ■ REMOVAL: 2.)

2. Mount the frame cover.

   (See [D-2: Mounting the Frame Covers].)



General Figure

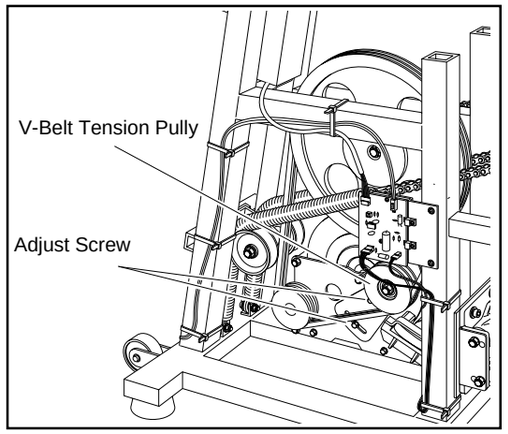


Fig.1

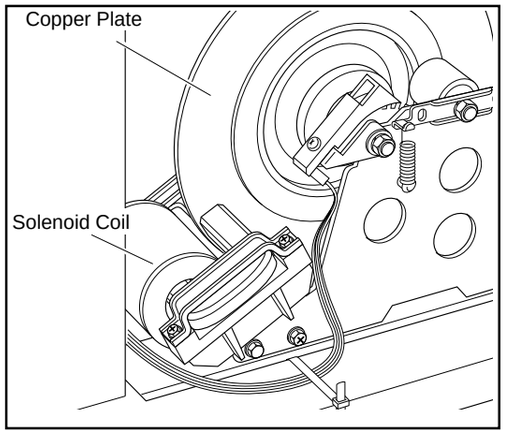


Fig.2

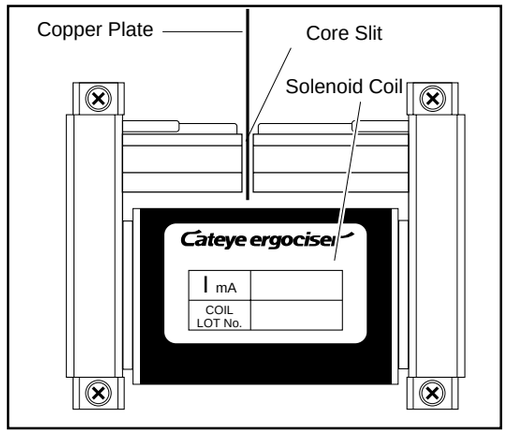


Fig.3

ES-5 Replacing the Solenoid Coil Set

[NOTE] When proceeding to the correction of solenoid coil, be sure not to damage the copper disk plate.

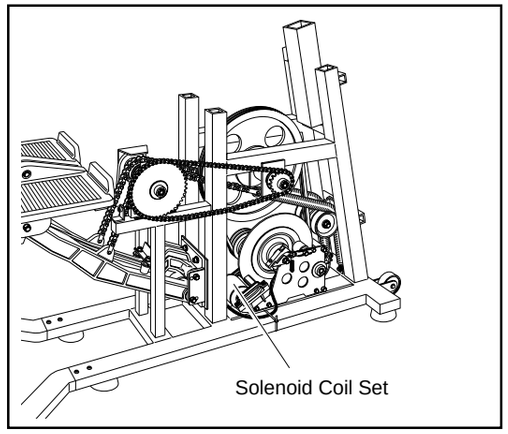
The work stated in this section should be carried out by two persons.

■ REMOVAL

1. Detach the frame cover.
   (See [D-1: Removing the Frame Covers].)
2. Loosen the adjust screw of the V-belt tension pulley and move the V-belt tension pulley to loosen the V-belt. (Fig. 1)
3. Detach the 3P connector at the power supply board. (Fig. 2)
4. Cut the cable holder which fixes the solenoid coil cable to the frame.
5. Remove four screws which fix the solenoid coil. (Fig. 3)
   Screw lock paint has been applied to these screws.
6. Detach two solenoid coil fixing plates to detach the solenoid coil. (Fig. 3)

■ ASSEMBLE

1. Assemble the solenoid coil to the solenoid coil mounting base, and provisionally fix the solenoid coil by using two solenoid coil fixing plates and four screws. (Fig. 3)
   The screws should be kept loosened to allow the solenoid coil to move. Also, note that the four screws should be tightened evenly.
2. Adjust the position of the solenoid coil as stated below.
   A. Move and adjust the solenoid coil so that it will not contact the copper disk plate. (Figs. 4 and 5)
   B. Give the copper disk plate a full rotation. If it does not contact the solenoid coil (core slit) at any portion, this completes the adjustment.
3. Evenly tighten the four screws to firmly fix the solenoid coil. (Fig. 3)
   [NOTE] Be sure to tighten the four screws evenly, as otherwise the position of the solenoid coil may be shifted.
4. Apply screw lock paint to the four screws. (Fig. 3)
5. By using a cable holder, fix the solenoid coil cable to the frame together with the CDC sensor cable. (Fig. 6)
6. Adjust the position of the V-belt tension pulley, and give tension to the V-belt.
   (See [MS-4: Replacing the V-Belt]: ■ REMOVAL: 2.)
7. Mount the frame cover.
   (See [D-2: Mounting the Frame Covers].)



General Figure

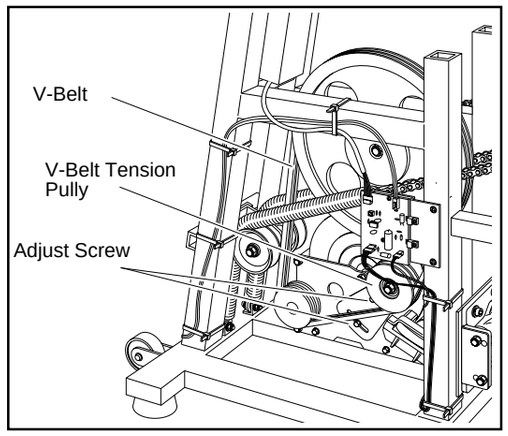


Fig.1

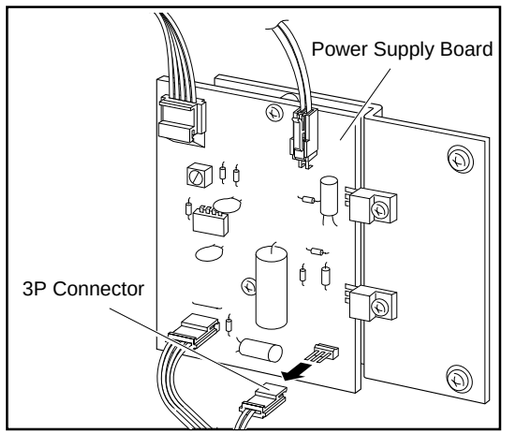


Fig.2

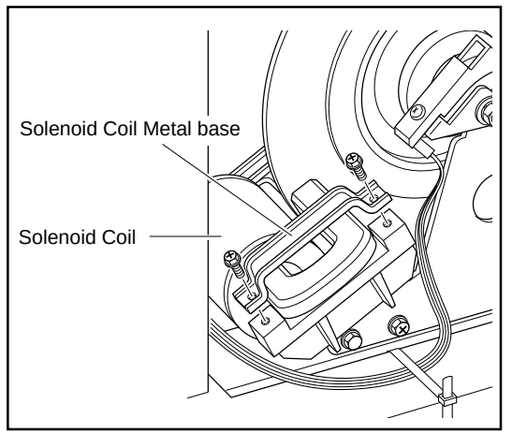


Fig.3

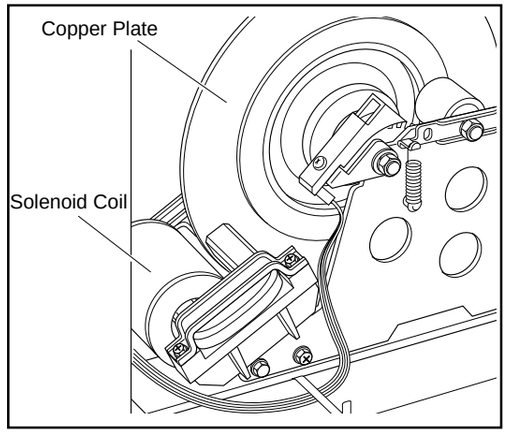


Fig.4

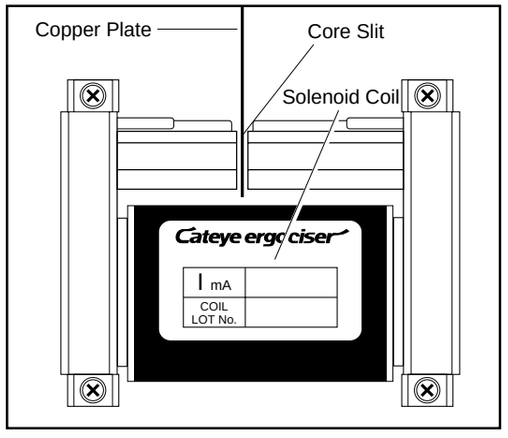


Fig.5

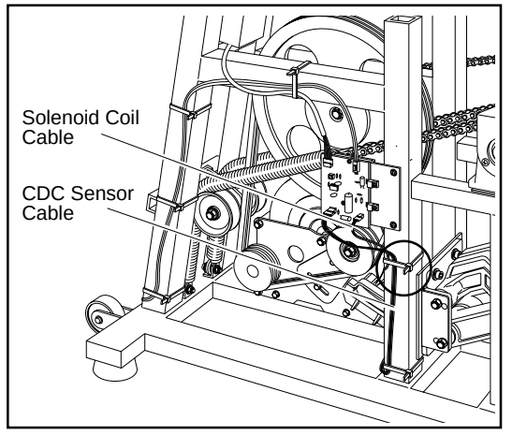


Fig.6

ES-6 Replacing the CDC Sensor Set

■ REMOVAL

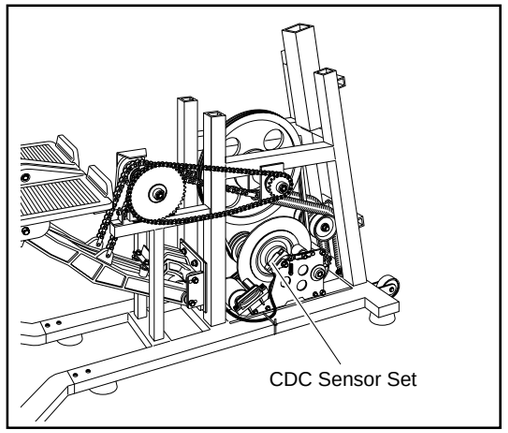
1. Detach the frame cover.
   (See [D-1: Removing the Frame Covers].)
2. Detach the CDC sensor set by loosening screws. (Fig. 1)
3. Detach the CDC sensor cable from the CDC sensor set.

■ ASSEMBLE

1. Connect the CDC sensor cable to a new CDC sensor set, and then mount it to the CDC sensor metal base. (Fig. 1)
2. Adjust the position of the CDC sensor.
   A. Rotate the CDC sensor around the screw. (Fig. 2)
   B. Rotate the CDC sensor around the screw, and adjust the sensor so that it can be positioned to parallel with the CDC magnet with the condition that the sensor does not touch the magnet. (Fig. 2)
3. Perform tests on the parts as specified for mounting and replacing the parts.

   [Tests]

   A. Connect the control unit and the 5P cable without mounting the cover. (Fig. 3)
   B. Turn on the power of the main unit, and rotate the pedal under the manual training mode to check that the cadence on the control unit will change.
   C. Then, turn off the power and detach the 5P cable from the control unit.
4. Assemble the frame cover.
   (See [D-2: Mounting the Frame Covers].)



General Figure

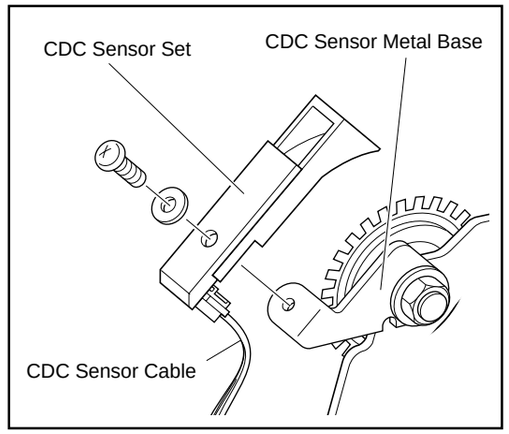


Fig.1

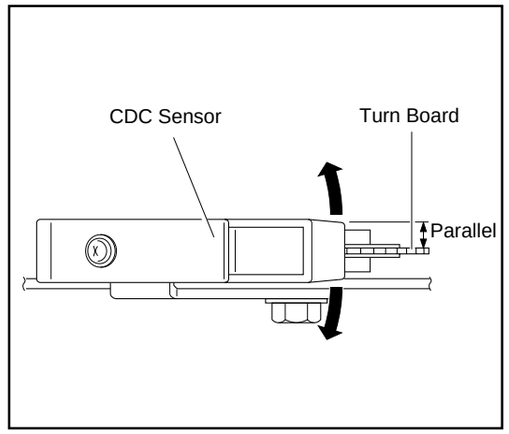
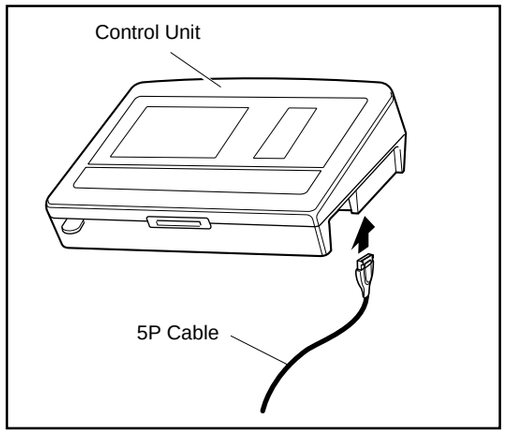


Fig.2



ES-7 Replacing the CDC Sensor Cable

■ REMOVAL

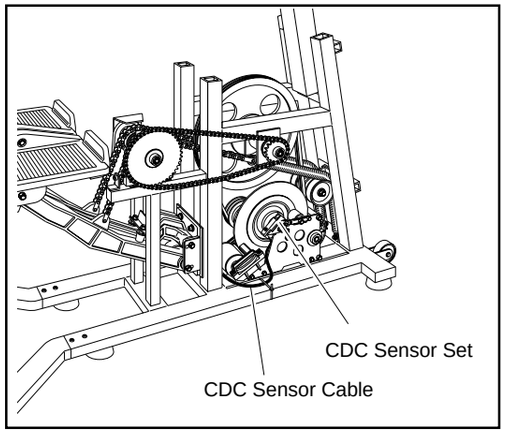
1. Detach the frame cover.
   (See [D-1: Removing the Frame Covers].)
2. Disconnect the 4P connector at the power supply board. (Fig. 1)
3. Cut the cable clip which fixes the CDC sensor cable to the frame. (Fig. 2)
4. Detach the CDC sensor cable from the CDC sensor set. (Fig. 3)

■ ASSEMBLE

1. Connect a new CDC sensor cable to the CDC sensor set. (Fig. 3)
2. Adjust the position of the CDC sensor.
   A. Rotate the CDC sensor around the screw. (Fig. 4)
   B. Rotate the CDC sensor around the screw, and adjust the sensor so that it can be positioned to parallel with the CDC magnet with the condition that the sensor does not touch the magnet. (Fig. 4)
3. Connect the 4P connector at the end of the CDC sensor cable to the power supply board. (Fig. 1)
4. Perform tests on the parts as specified for mounting and replacing the parts.

   [Tests]

   A. Connect the control unit and the 5P cable without mounting the cover. (Fig. 2)
   B. Turn on the power of the main unit, and rotate the pedal under the manual training mode to check that the cadence on the control unit will change.
   C. Then, turn off the power and detach the 5P cable from the control unit.
5. By using a cable holder, fix the CDC sensor cable to the frame together with the power cable. (Fig. 2)
6. Assemble the frame cover.
   (See [D-2: Mounting the Frame Covers].)



General Figure

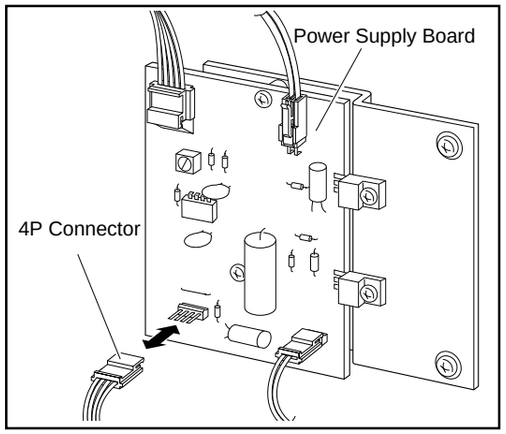


Fig.1

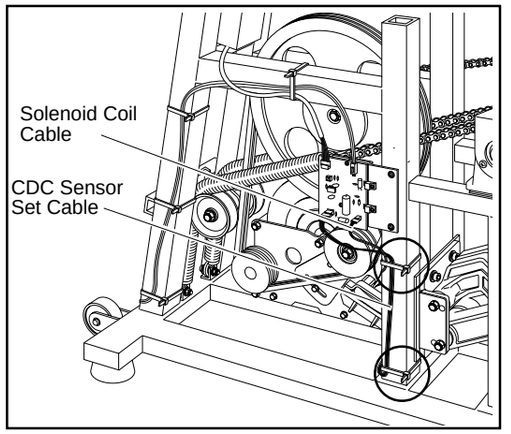


Fig.2

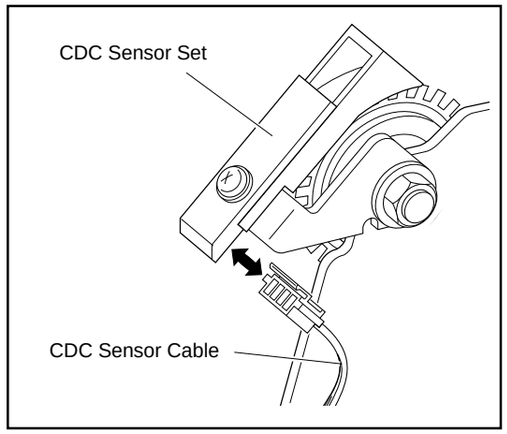


Fig.3

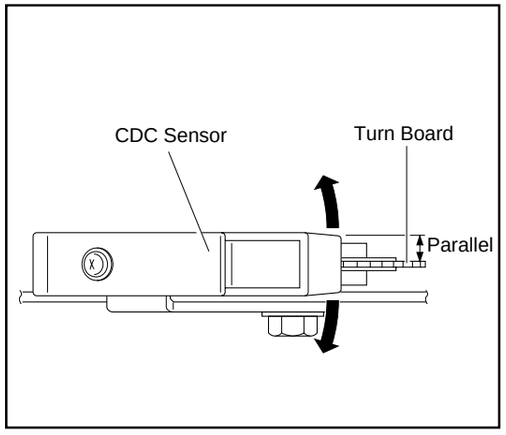


Fig.4

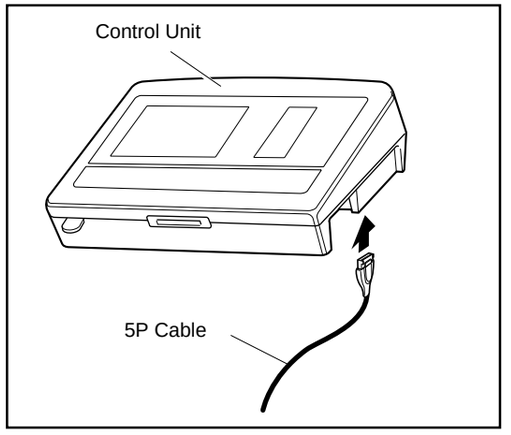


Fig.5

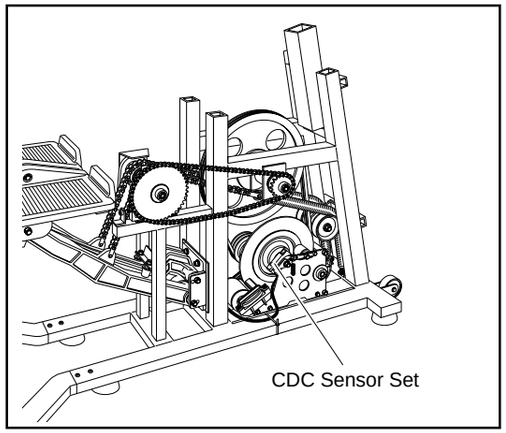
ES-8 Correcting the Position of CDC Sensor

The positional correction of the CDC sensor should be performed after removing the frame cover.

(See [D-1: Removing the Frame Covers], [D-2: Mounting the Frame Covers].)

■ Correcting the Position of the Solenoid Coil

1. Rotate the CDC sensor around the screw.
2. Adjustment will be completed when the CDC sensor is positioned in parallel with the CDC magnet with the condition that the sensor does not touch the magnet.



General Figure

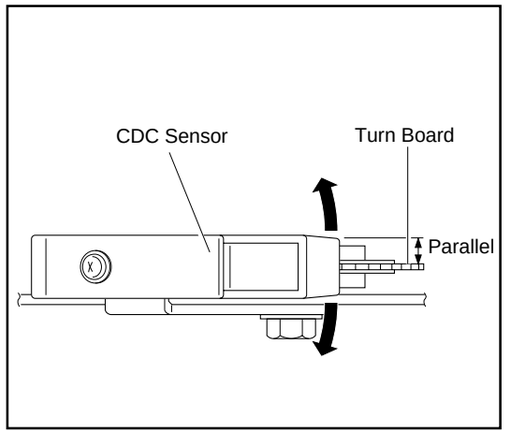


Fig.1

ES-9 Replacing the Control Unit

■ REMOVAL

1. Remove the pulse rate sensor from the control unit. (Fig. 1)
2. Remove seven tapping screws from the control unit cover, and then remove the control unit. (Fig. 2)
3. Disconnect the cable connector, which is at the end of the 5P cable, through the cable inlet at the back of the control unit. (Fig. 2)

■ ASSEMBLE

1. In case the Wireless Chestbelt Pulse Sensor is used and the control unit is going to be replaced with a new control unit, the receiver board should be detached from the previous control unit and mounted on the new control unit.

   (See Operating Instructions for Wireless Chestbelt Pulse Sensor Kit.)

2. Check that the select switches at the back of the control unit should be set to the positions that reflect desired display. (Fig. 3)

   [Unit Display]

   - m/kg 1 : ON
   - feet/lb 1 : OFF

   [Display Language]

   - Japanese 2 : ON 3 : OFF 4 : OFF
   - English 2 : OFF 3 : OFF 4 : OFF
   - German 2 : OFF 3 : ON 4 : OFF
   - French 2 : ON 3 : ON 4 : OFF

3. Firmly insert the cable connector, which is at the end of the 5P cable, to the cable inlet at the back of the control unit. (Fig. 2)
4. Put the control unit on the control unit cover, and fix the unit with seven tapping screws from beneath the cover. (Fig. 2)
5. Mount the pulse rate sensor to the control unit. (Fig. 1)

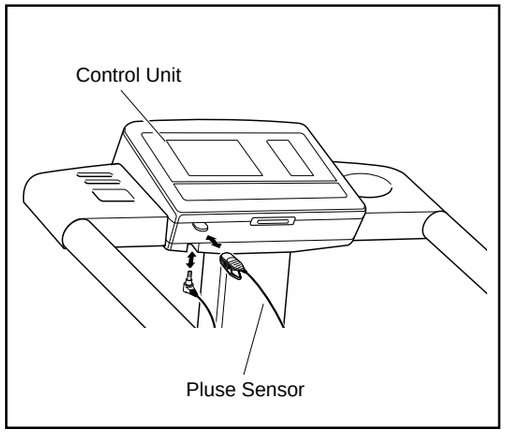


Fig.1

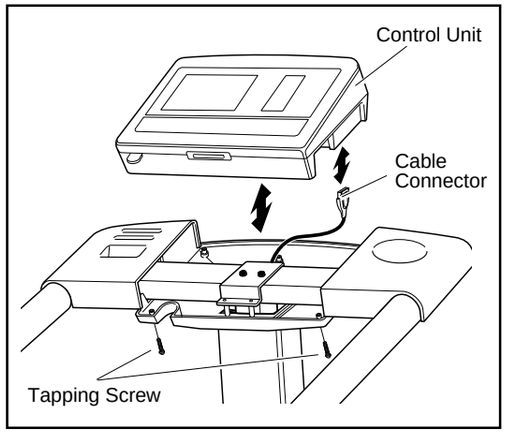


Fig.2

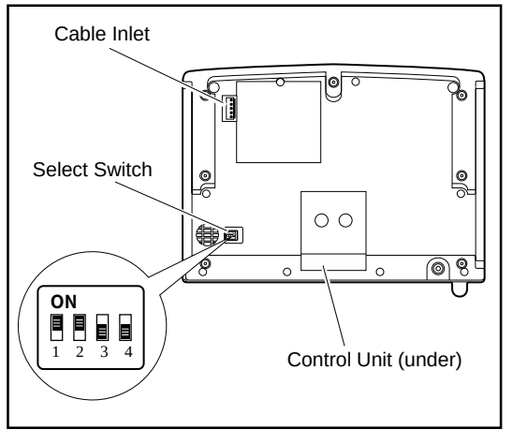


Fig.3

ES-10 Replacing the Button Panel

1. Insert a thin cutter knife in between the button panel and the body, and carefully peel off the button panel. (Fig. 1)

   [NOTE] Be careful not to damage the control unit.

2. Clean the adhesive agent, if any, on the control unit.
3. Peel off the seal at the back of the new button panel and put it to the control unit.

   Sufficiently press the button panel thus placed.

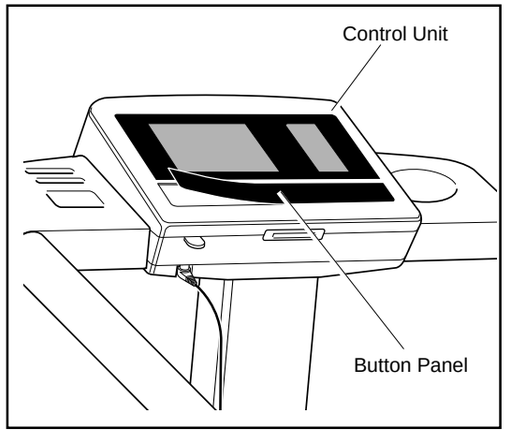


Fig.1

MS-1 Replacing the Workload Unit

[NOTE]Be careful not to let the copper disk plate hit the frame, etc. when removing or mounting the workload unit.

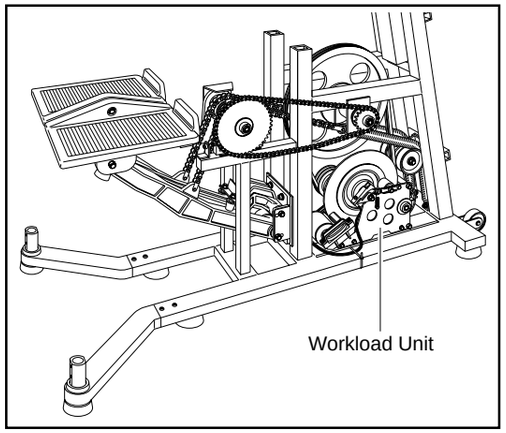
The procedures stated in this section should be performed by two persons.

■ REMOVAL

1. Detach the frame cover and then detach the V-belt.
   (See [MS-4: Replacing the V-Belt]: ■ REMOVAL.)
2. Detach the 3P and 4P connectors at the power supply board. (Fig. 1)
3. Detach the workload unit fixing hexagon head bolts (right and left sides).(Figs. 2 and 3)
4. Starting from the right side, lift up the entire workload unit to the position where it can be detached from the workload unit fixing metal base, and remove it. (Fig. 4)

■ ASSEMBLE

1. Assemble the workload unit so that it can engage with the workload unit fixing metal base at the frame. (Fig. 5)
2. Fix the workload unit to the frame by using workload unit fixing hexagon head screws (right and left). (Figs. 2 and 3)
3. Connect the 3P and 4P connectors to the power supply board. (Fig. 1)
4. Mount the V-belt, and then mount the frame cover.
   (See [MS-4: Replacing the V-Belt]: ■ SEMBLY.)



General Figure

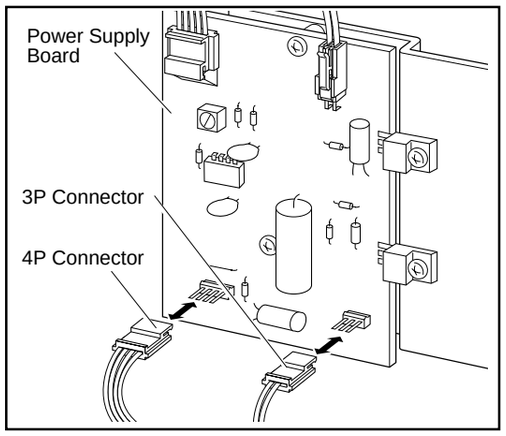


Fig.1

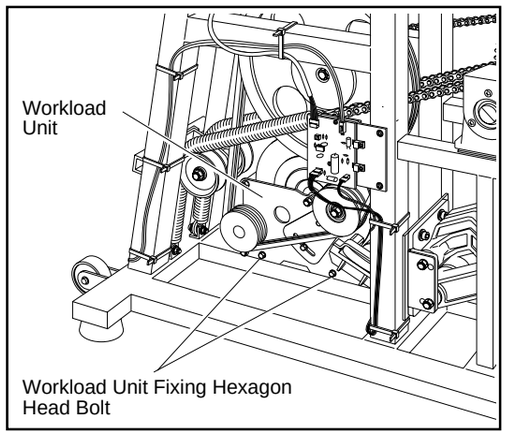


Fig.2

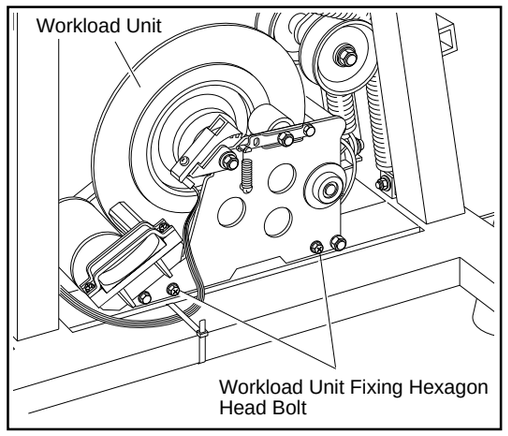


Fig.3

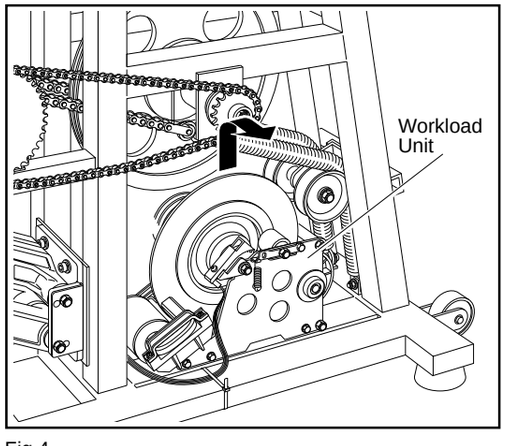


Fig.4

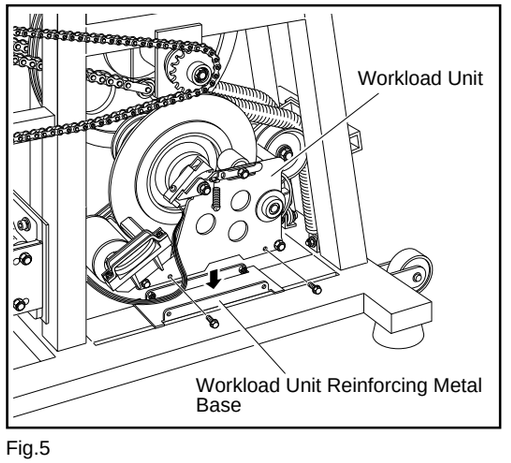


Fig.5

MS-2 Replacing the Accelerating Chain

■ REMOVAL

1. Detach the frame cover.

   (See [D-1: Removing the Frame Covers].)

2. Loosen three screws which fix the Shaft Set A and the frame from the top side.

   Do not detach these screws, but just loosen them. (Fig. 1)

3. Remove two cap bolts, and shift the Shaft Set A frontward. (Fig. 2)

   Thus, the accelerating chain can be loosened.

4. Detach the accelerating chain.

   The chain can be detached when the sprocket is rotated backward after detaching the lower part of the sprocket A. (Fig. 3)

   [Reference] The sprocket A can be rotated backward when the pedal is lowered.

■ ASSEMBLE

1. Hang the chain over the sprocket B, and then hang it over the top portion of the sprocket A. (Fig. 4)
2. Rotate the sprocket A backward and hang the entire chain over the sprocket B.
3. Connect the Shaft Set A and the frame by using two cap bolts. (Fig. 2)

   [NOTE] Tightening should be made to the extent that the tip of the cap bolt just engages the Shaft Set A. Also, be careful to evenly tighten the two cap bolts.

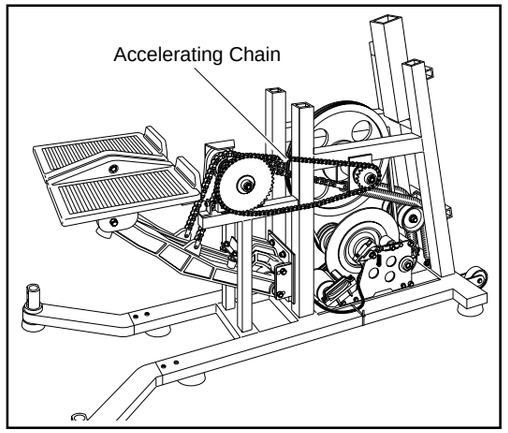
4. Tension adjustment of the accelerating chain can be performed by tightening the cap bolts, and thus sliding the sprocket A (Shaft Set A) back and forth.

   A. Rotate the chain and find the most tensioned status of the chain.

   B. When the chain is correctly tensioned, the slagging should be 3mm to 7mm under the most tensioned status of the chain. (Fig. 5)

5. Tighten the screws which connects the Shaft Set A and the frame from the top side to fix them. (Fig. 1)
6. Assemble the frame cover.

   (See [D-2: Mounting the Frame Covers].)



General Figure

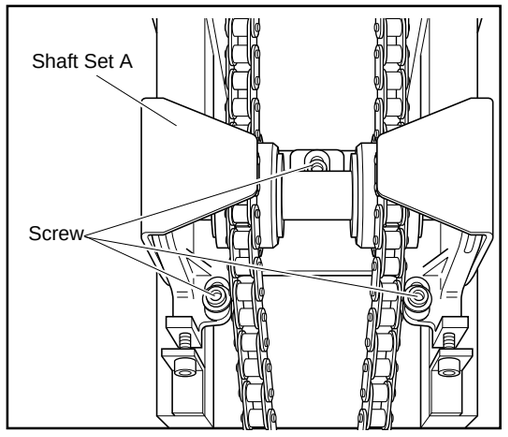


Fig.1

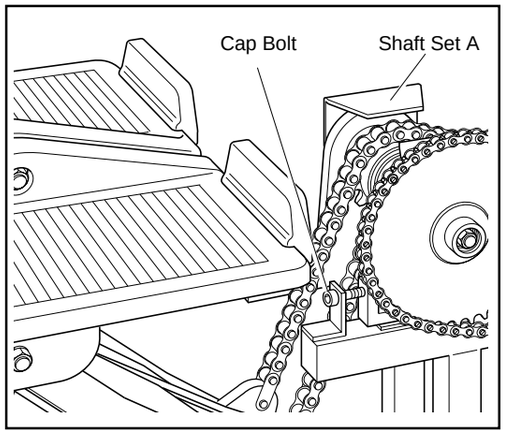


Fig.2

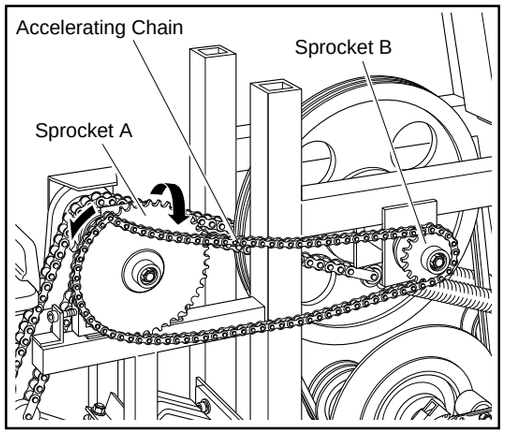


Fig.3

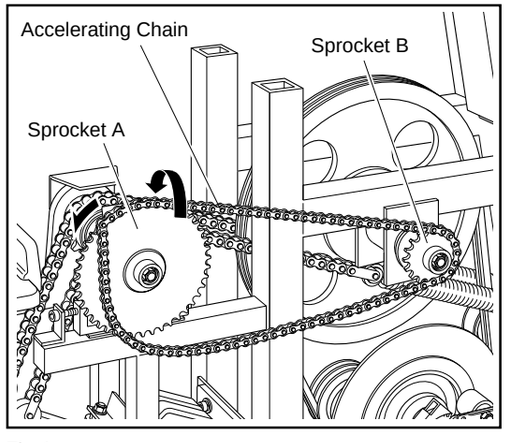


Fig.4

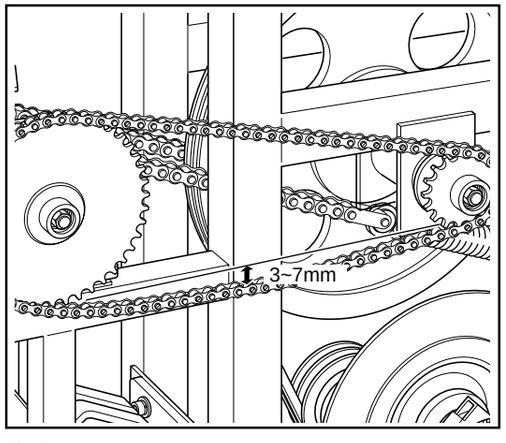


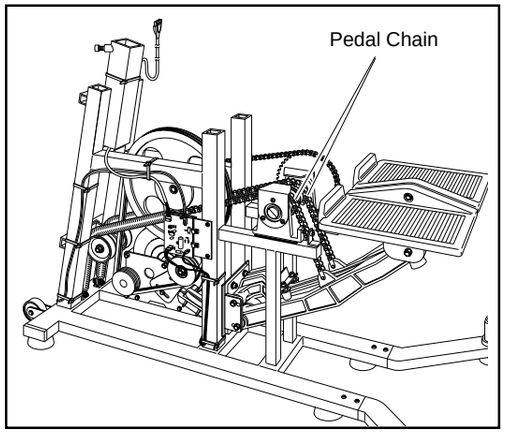
Fig.5

MS-3 Replacing the Pedal Chain

When replacing with brand-new chains, be sure to replace both of the two chains.

■ REMOVAL

1. Detach the frame cover.
   (See [D-1: Removing the Frame Covers].)
2. Using a plier, detach the snap of the chain joint which connects the pedal chains and the spring. (Fig. 1)
3. While slightly pulling the spring, detach the plate at the snap side of the chain joint.
4. While holding the pedal chain with a single hand, detach the spring from the chain joint by pulling the spring.
5. Detach the chain joint that is left at the tip of the pedal chain, and lower the pedal down to the lowest position.
6. Detach the snap of the chain joint which connects the linkstep set and the step chain.
7. Pull off the chain joints in the right and left directions to remove the pedal chain from the linkstep set.



General Figure

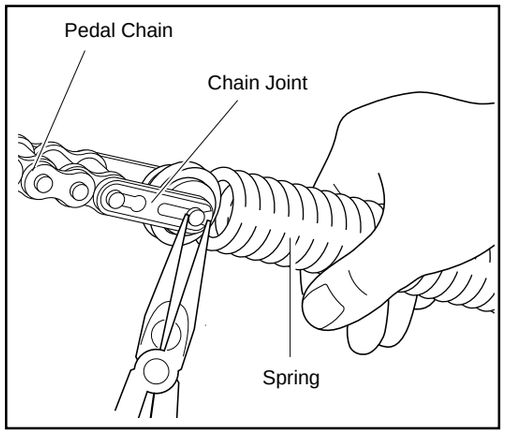


Fig.1

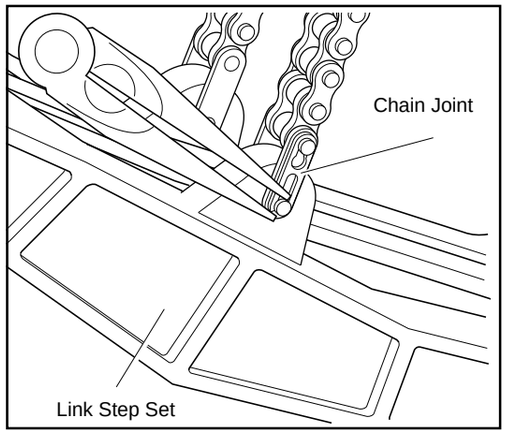


Fig.2

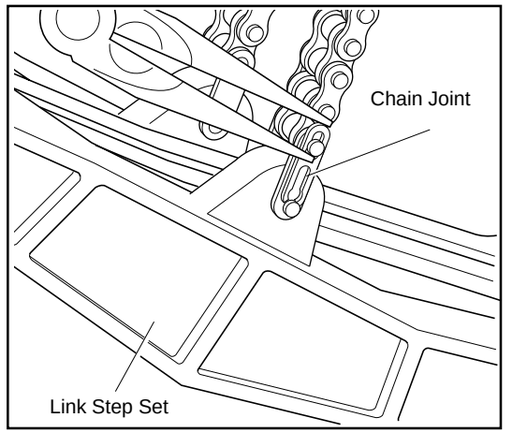


Fig.3

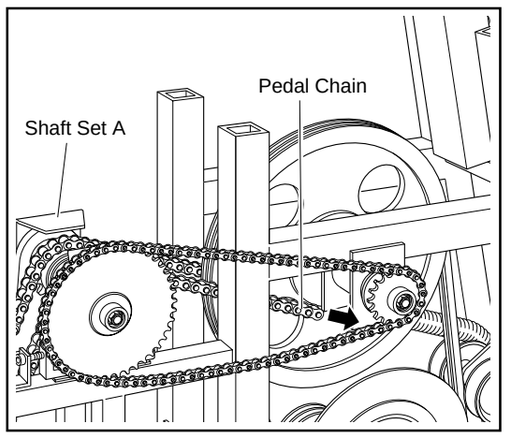


Fig.4

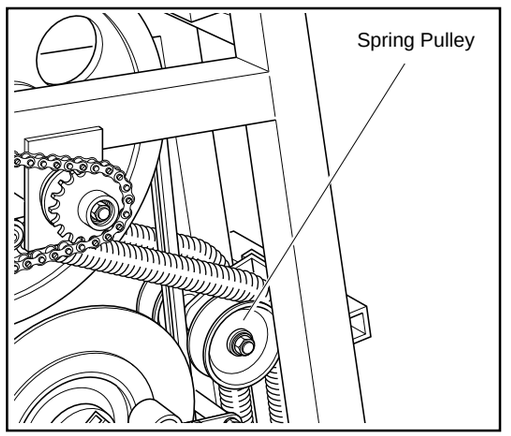


Fig.5

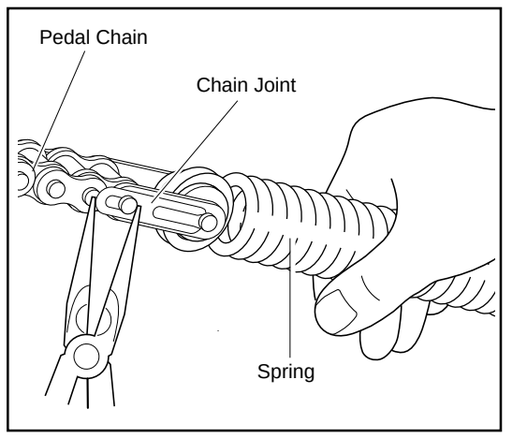


Fig.6

MS-4 Replacing the V-Belt

The procedures stated in this section should be performed by two persons.

In the case of replacing the V-belts, be sure to change both of the two belts.

■ REMOVAL

1. Detach the frame cover.

   (See [D-1: Removing the Frame Covers].)

2. Loosen the adjust screws of the V-belt tension pulley to free the V-belt tension pulley. (Fig. 1)
3. While rotating the pulley A, remove the two V-belts. (Fig. 2)

■ ASSEMBLE

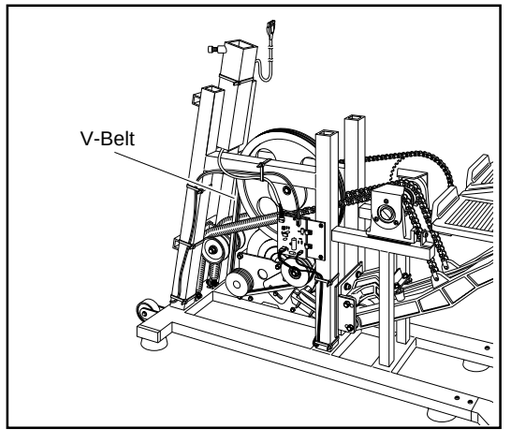
1. Hook the two V-belts on the large pulley, tension pulley and the small pulley.
2. To obtain an adequate tension of the V-belt, use a spring balancer (special tool) to adjust the position of the V-belt tension pulley.

   A. Insert the spring balancer as depicted through between the frames until the tip of the scale come to the position of the V-belt tension pulley. (Fig. 3)

   B. Press the spring balancer until the reading is 10kg. While maintaining this status, tighten the adjust screw.

3. Mount the frame cover.

   (See [D-2: Mounting the Frame Covers].)



Ceneral Figure

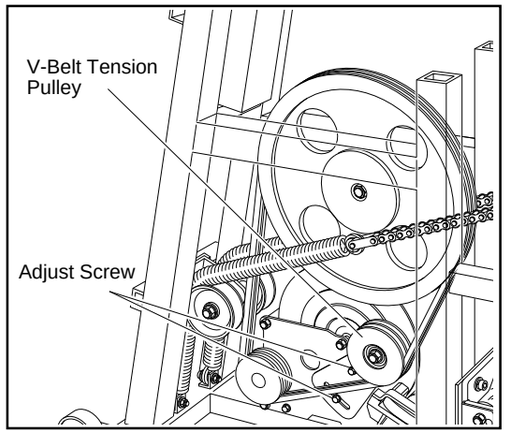


Fig.1

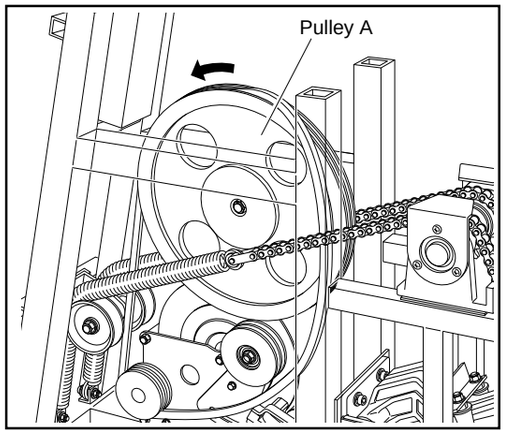


Fig.2

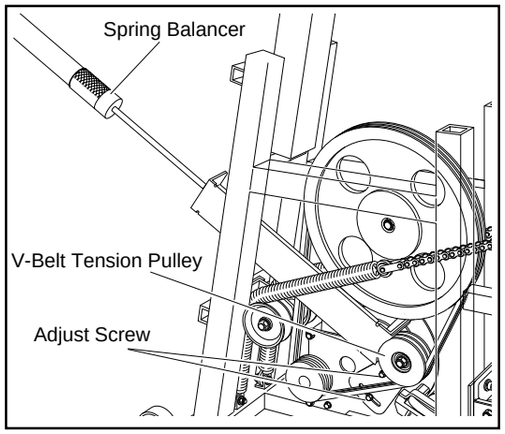


Fig.3

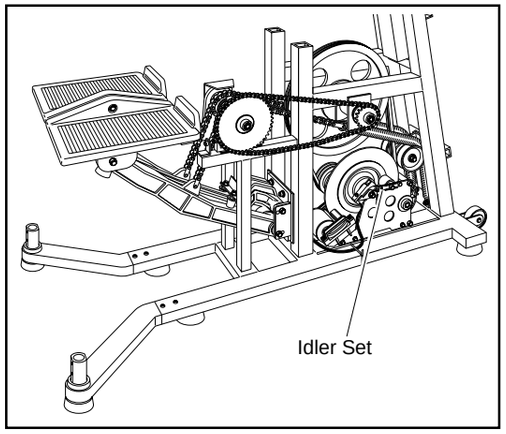
MS-5 Replacing the Idler Set

■ REMOVAL

1. Detach the frame cover.
   (See [D-1: Removing the Frame Covers].)
2. Detach the idler spring from the pawl of the idler metal base. (Fig. 1)
3. Remove the idler mounting bolts,, and detach the idler set. (Fig. 2)

■ ASSEMBLE

1. Mount the idler set by using an idler mounting bolt. (Fig. 2)
2. Hook the idler spring on the pawl of the idler to give tension to the belt.
3. Mount the frame cover.
   (See [D-2: Mounting the Frame Covers].)



General Figure

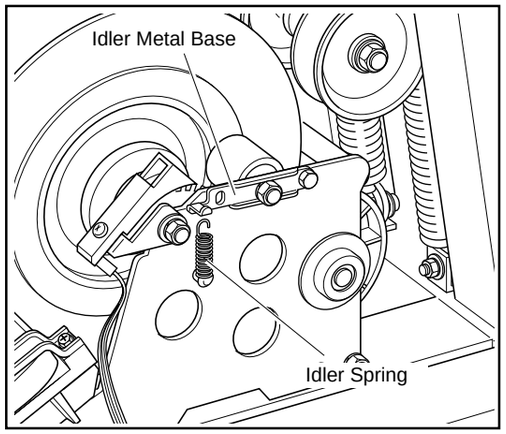


Fig.1

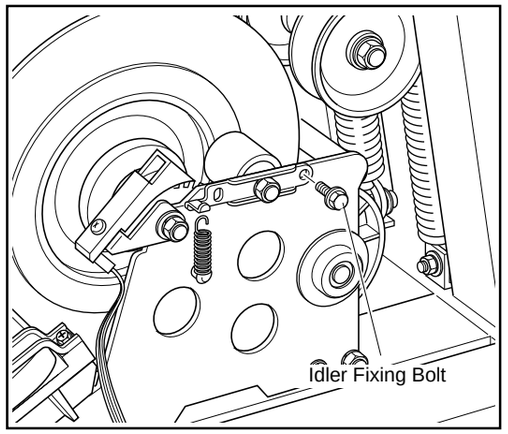


Fig.2

MS-6 Replacing the Pulley A

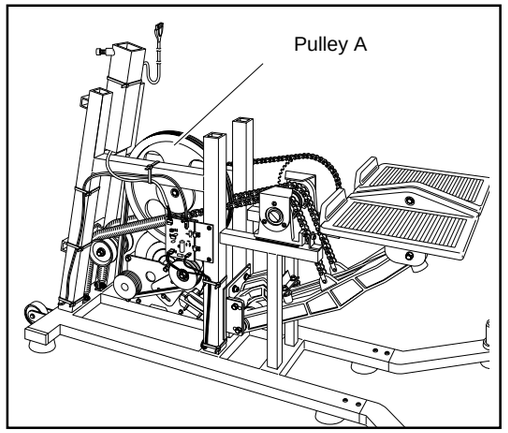
The procedures stated in this section should be performed by two persons.

■ REMOVAL

1. Detach the frame cover, and then remove the V-belt.
   (See [MS-4: Replacing the V-Belt]: ■ REMOVAL.)
2. Install the cotterless gear crank removing/fastening tool, and rotate it counter-clockwise by using a wrench to remove the crank nut. (Fig. 1)
3. Change the direction of the cotterless gear crank removing/fastening tool, and rotate it clockwise to remove the pulley A from the crank shaft. (Fig. 2)

■ ASSEMBLE

1. Assemble the pulley A into the crank shaft.
2. Firmly tighten the pulley nut by using the cotterless gear crank removing/fastening tool and a wrench. (Fig. 1)
3. Mount the V-belts, and then mount the frame cover.
   (See [MS-4: Replacing the V-Belt]: ■ ASSEMBLE.)



General Figure

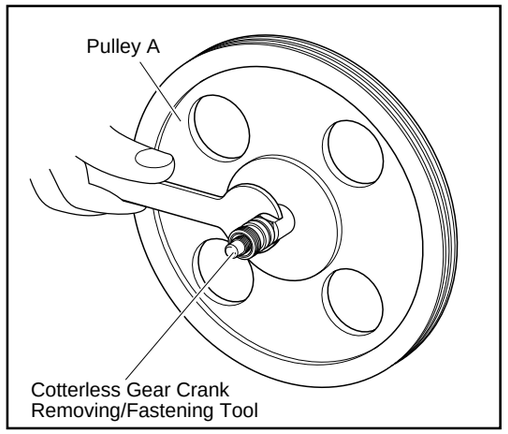


Fig.1

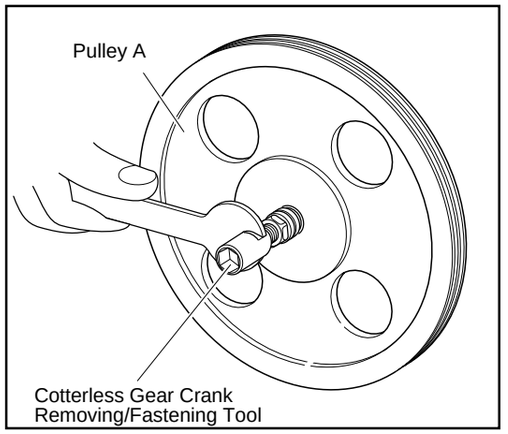


Fig.2

MS-7 Replacing the V-Belt Tension Pulley

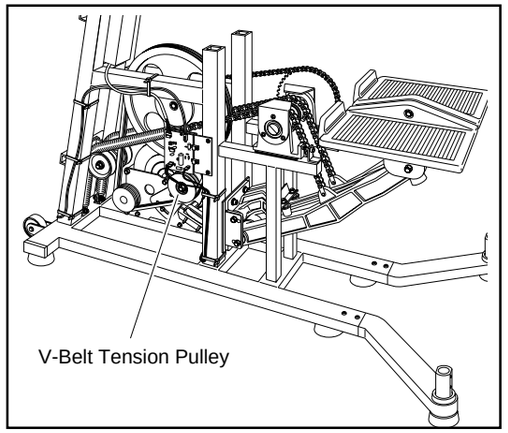
The procedures stated in this section should be performed by two persons.

■ REMOVAL

1. Detach the frame cover, and then remove the V-belt.
   (See [MS-4: Replacing the V-Belt]: ■ REMOVAL.)
2. Remove the hexagon head bolt, and then remove the V-belt tension pulley. (Fig. 1)

■ ASSEMBLE

1. Mount the V-belt tension pulley by using a hexagon head bolt.
2. Mount the V-belts, and then mount the frame cover.
   (See [MS-4: Replacing the V-Belt]: ■ ASSEMBLE.)



General Figure

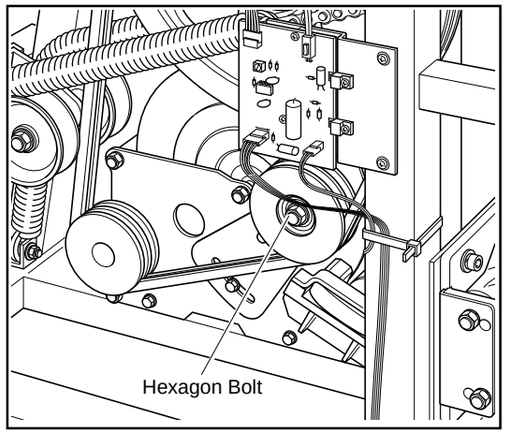


Fig.1

MS-8 Replacing the Sprocket (Gear for Chains)

[1] Sprocket A

■ REMOVAL

1. Detach the frame cover, and then remove the accelerating chain.

   (See [MS-2: Replacing the Accelerating Chain]: ■ REMOVAL.)

2. Install the cotterless gear crank removing/fastening tool, and rotate it counter-clockwise by using a wrench to remove the crank nut. (Fig. 1)
3. Detach the sprocket A from the Shaft Set A.

■ ASSEMBLE

1. Assemble the sprocket A into the Shaft Set A.
2. Firmly tighten the crank nut by using the cotterless gear crank removing/fastening tool and a wrench. (Fig. 1)
3. Mount the accelerating chain, and then mount the frame cover.

   (See [MS-2: Replacing the Accelerating Chain]: ■ REMOVAL.)

[2] Sprocket B

■ REMOVAL

1. Detach the frame cover, and then remove the accelerating chain.

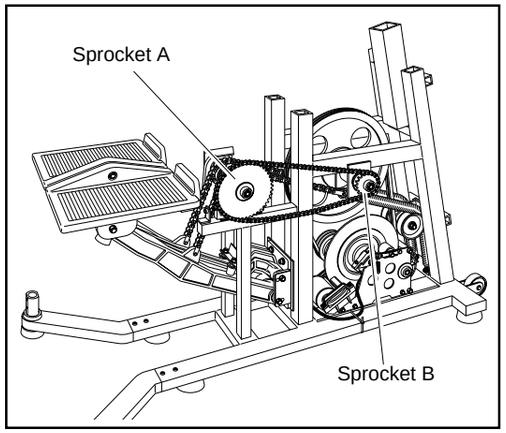
   (See [MS-2: Replacing the Accelerating Chain]: ■ REMOVAL.)

2. Install the cotterless gear crank removing/fastening tool, and rotate it counter-clockwise by using a wrench to remove the crank nut. (Fig. 2)
3. Change the direction of the cotterless gear crank removing/fastening tool, and rotate it clockwise to remove the sprocket B from the crank shaft. (Fig. 3)

■ ASSEMBLE

1. Assemble the sprocket B into the crank shaft.
2. Firmly tighten the crank nut by using the cotterless gear crank removing/fastening tool and a wrench. (Fig. 2)
3. Mount the accelerating chain, and then mount the frame cover.

   (See [MS-2: Replacing the Accelerating Chain]: ■ ASSEMBLE.)



General Figure

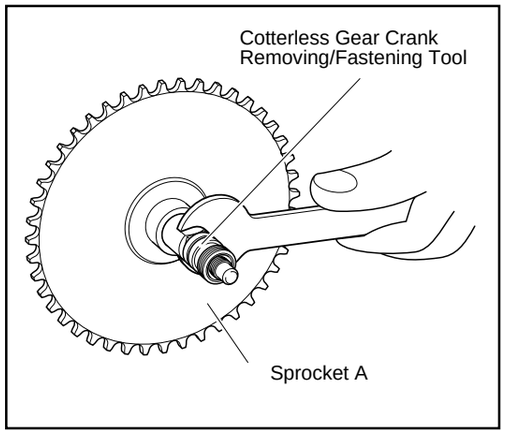


Fig.1

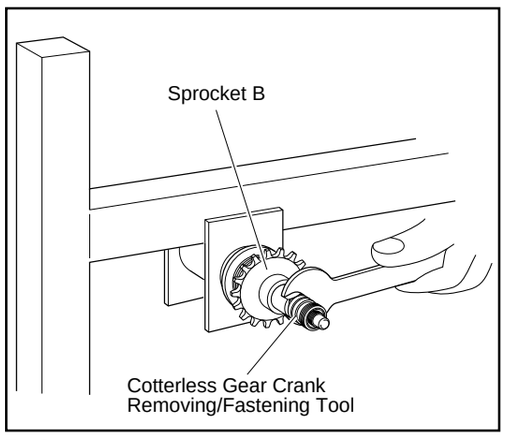


Fig.2

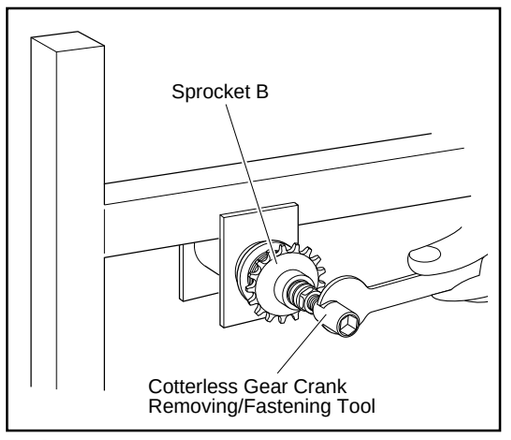


Fig.3

MS-9 Replacing the Shaft Set A

■ REMOVAL

1. Detach the frame cover, and then detach the sprocket A.

   (See [MS-8: Replacing the Sprocket (Gear for Chains)]: [1] Sprocket A: ■ REMOVAL.)

2. Using a plier, detach the snap of the chain joint which connects the pedal chains and the spring. (Fig. 1)
3. While slightly pulling the spring, detach the plate at the snap side of the chain joint.
4. While holding the pedal chain with a single hand, detach the spring from the chain joint by pulling the spring.
5. Detach the chain joint that is left at the tip of the pedal chain, and lower the pedal down to the lowest position.
6. Detach the Shaft Set A by removing three screws which fix the Shaft Set A from the top. (Fig. 2)

■ ASSEMBLE

1. Assemble the Shaft Set A into the frame, and provisionally fix it with three screws.

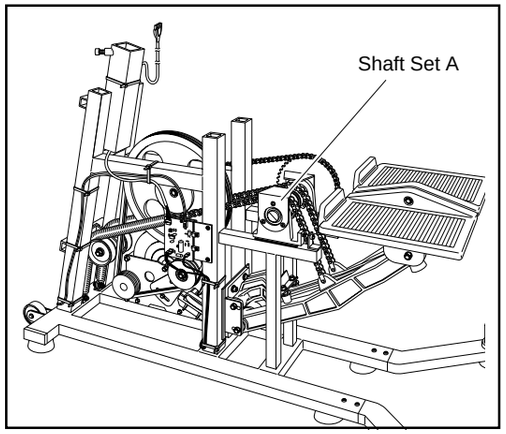
   The screws should be left loosened so that the Shaft Set A can slide back and forth. (Fig. 2)

2. Engage the pedal chains with the sprocket of Shaft Set A, and pull the chains until the pedal should position at the highest point. (Fig. 3)
3. While holding the pedal chain with a single hand, mount the chain joints at the leading edge of the pedal chain.
4. While retaining the pedal chain with a single hand, use the other hand to pull the spring, and hook the leading edge of the spring on the chain joint.

   Be sure to ensure that the spring has been correctly hooked on the spring pulley. (Fig. 4)

5. Slightly pull the spring, and mount the snap-side plate of the chain joint.
6. Fix the snaps of the chain joints, which connect the pedal chains and the spring, by using a plier.
7. Mount the sprocket A and the accelerating chain, and then mount the frame cover.

   (See [MS-8: Replacing the Sprocket (Gear for Chains)]: [1] Sprocket A: ■ ASSEMBLE.)



General Figure

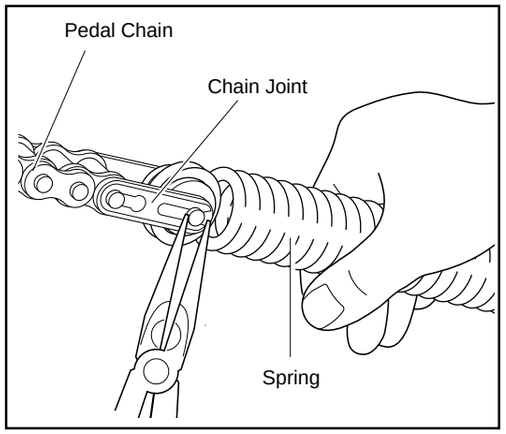


Fig.1

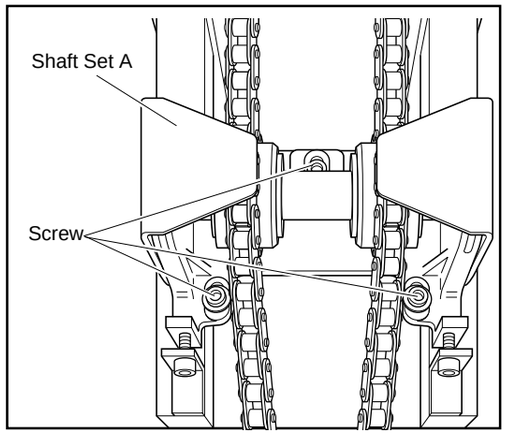


Fig.2

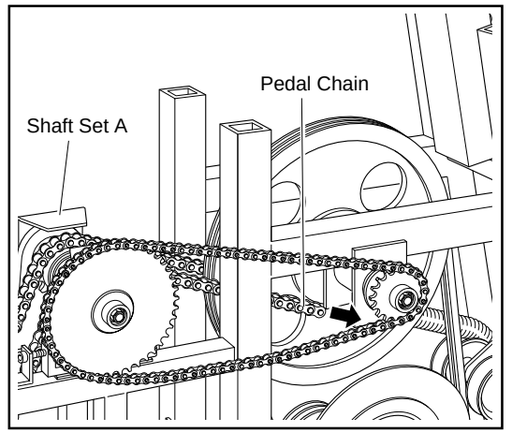


Fig.3

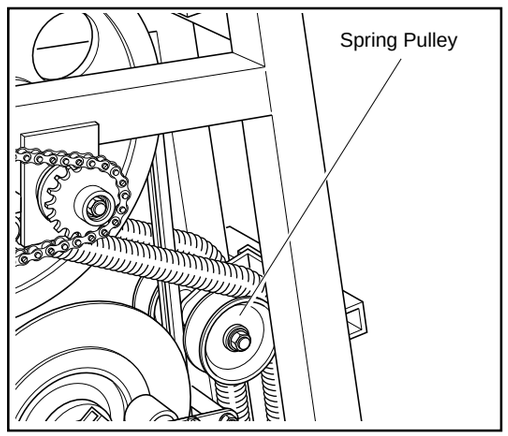


Fig.4

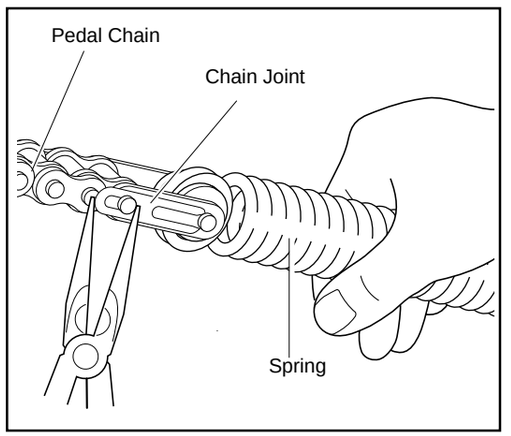


Fig.5

MS-10 Replacing the Spring

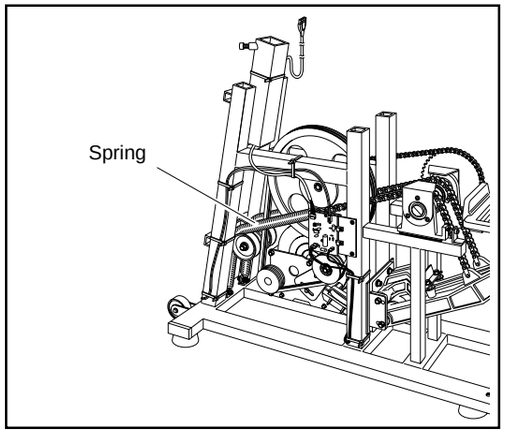
In the case of replacing the spring, be sure to change both of the two springs.

■ REMOVAL

1. Detach the frame cover.
   (See [D-1: Removing the Frame Covers])
2. Using a plier, detach the snap of the chain joint which connects the pedal chains and the spring. (Fig. 1)
3. While slightly pulling the spring, detach the plate at the snap side of the chain joint.
4. While holding the pedal chain with a single hand, detach the spring from the chain joint by pulling the spring.
5. Remove the chain joint that is left at the leading edge of the pedal chain.
6. Remove the hexagon head nut, and then detach the spring from the frame. (Fig. 2)

■ ASSEMBLE

1. Mount the spring on the frame by using a hexagon head nut, a spring washer and a plain washer. (Fig. 3)
2. While holding the pedal chain with a single hand, mount the chain joints at the leading edge of the pedal chain.
3. While retaining the pedal chain with a single hand, use the other hand to pull the spring, and the hook the leading edge of the spring on the chain joint.
   Be sure to ensure that the spring has been correctly hooked on the spring pulley. (Fig. 4)
4. Slightly pull the spring, and mount the snap-side plate of the chain joint.
5. Fix the snaps of the chain joints, which connect the pedal chains and the spring, by using a plier. (Fig. 6)
6. Mount the frame cover
   (See [D-2: Mounting the Frame Covers].)



General Figure

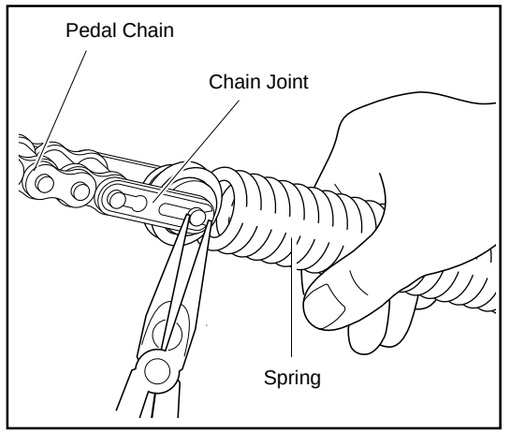


Fig.1

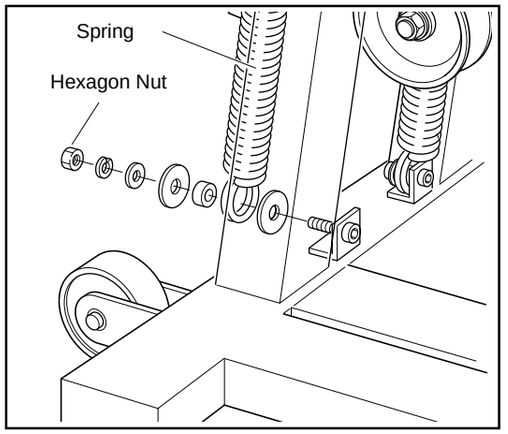


Fig.2

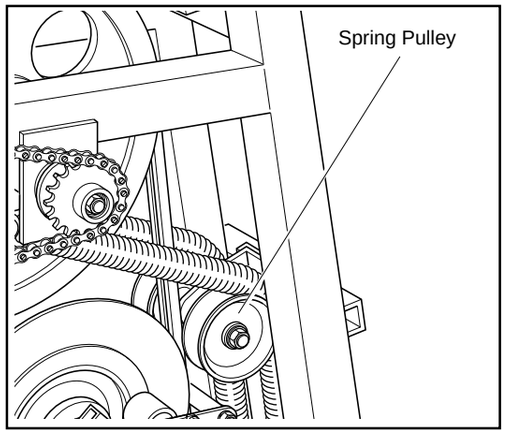


Fig.3

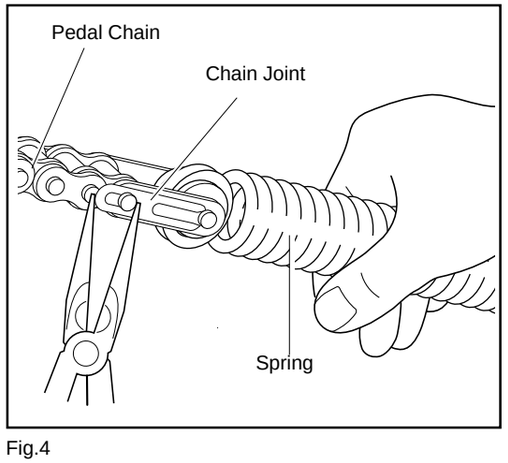


Fig.4

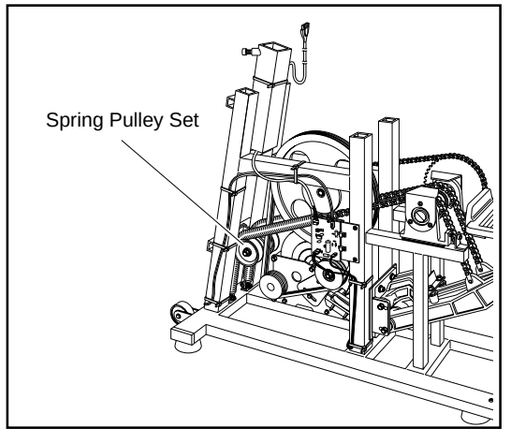
MS-11 Replacing the Spring Pulley Set

■ REMOVAL

1. Detach the frame cover.
   (See [D-1: Replacing the Frame Covers].)
2. Using a plier, detach the snap of the chain joint which connects the pedal chains and the spring. (Fig. 1)
3. While slightly pulling the spring, detach the plate at the snap side of the chain joint.
4. While holding the pedal chain with a single hand, detach the spring from the chain joint by pulling the spring.
5. Remove the chain joint that is left at the leading edge of the pedal chain.
6. Remove the hexagon head nut, and then detach the spring pulley set from the frame. (Fig. 2)

■ ASSEMBLE

1. Mount the spring pulley set by using a hexagon head bolt. (Fig. 2)
2. While holding the pedal chain with a single hand, mount the chain joints at the leading edge of the pedal chain.
3. While retaining the pedal chain with a single hand, use the other hand to pull the spring, and hook the leading edge of the spring on the chain joint.
   Be sure to ensure that the spring has been correctly hooked on the spring pulley. (Fig. 4)
4. Slightly pull the spring, and mount the snap-side plate of the chain joint.
5. Fix the snaps of the chain joints, which connect the pedal chains and the spring, by using a plier. (Fig. 5)
6. Mount the frame cover.
   (See [D-2: Mounting the Frame Covers].)



General Figure

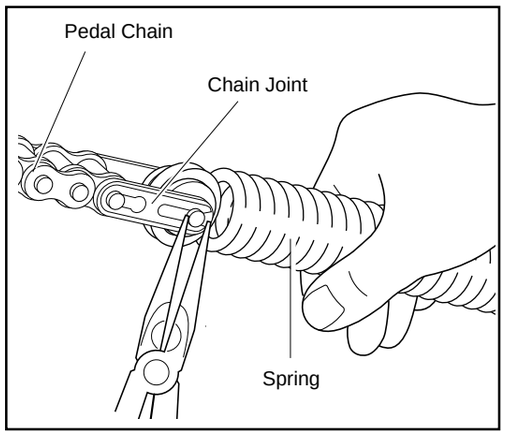


Fig.1

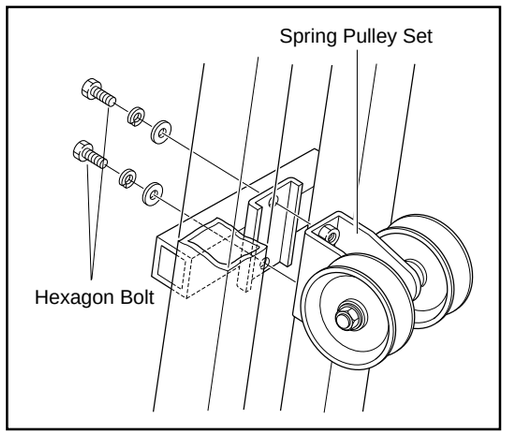


Fig.2

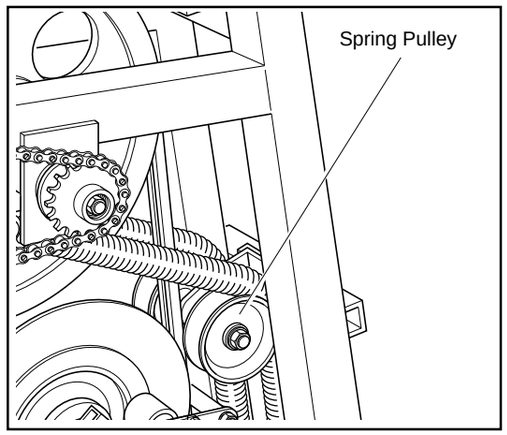


Fig.3

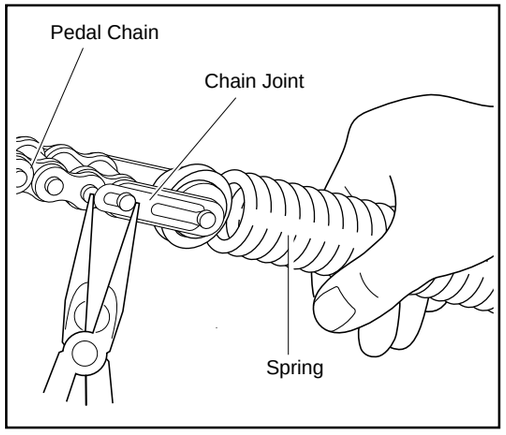


Fig.4

MS-12 Replacing the Linkstep Set (1)

The procedures stated in this section should be performed by two persons.

Also, prepare the following tools.

A. Metal Bar 2 pieces (Dia: 7mm to 20mm, Length: 20cm or longer)

B. L Wrench 2 pieces (Dia: 5mm to 12mm)

■ REMOVAL

1. Detach the frame cover.

   (See [D-1: Removing the Frame Covers].)

2. One worker should lower the right and left pedals to the lowest level. While maintaining this status, the other worker should set, as stoppers, the two metal bars and two L wrenches as depicted. (Figs. 1 and 2)

3. Gradually move the right and left pedals, while paying caution to the metal bar and the L wrench.

   [CAUTION] During this procedure, if the metal bar and the L wrench tend to be broken, change these tools to more rigid metal after lowering the pedals and removing these tools.

4. Remove a snap, by using a plier, at the chain joints which connect the linkstep set and the pedal chain. (Fig. 3)

5. Pull off the chain joints in the right and left directions to remove the linkstep set and the pedal chain.

6. Remove the four cap bolts which fix the linkstep set and the frame, and then de-tach the linkstep set. (Fig. 4)

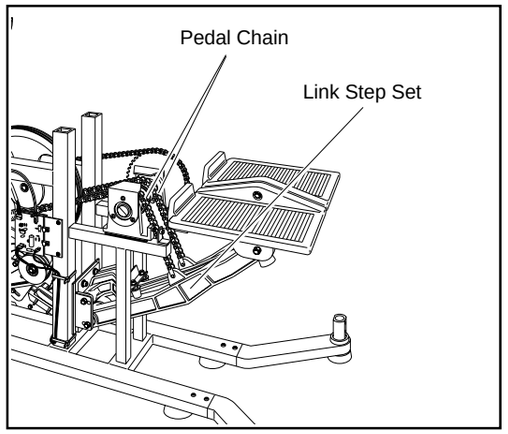
[Reference] For pulling the linkstep out of the frame, take the following procedures.

A. Put the linkstep set sideways.

B. Move the linkstep set so that the link positions perpendicular to the pedal as depicted. (Fig. 5)

C. Pull the linkstep set out of the frame.

To be contined on next page (■ ASSEMBLE)



General Figure

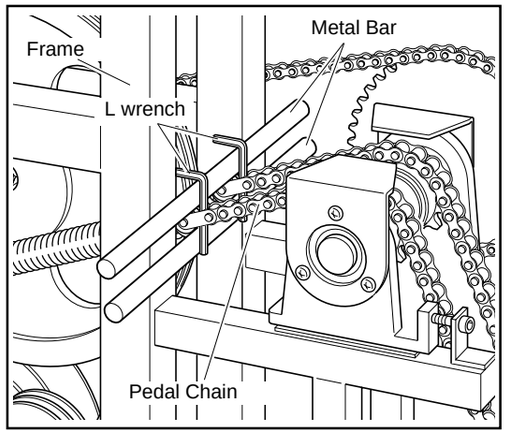


Fig.1

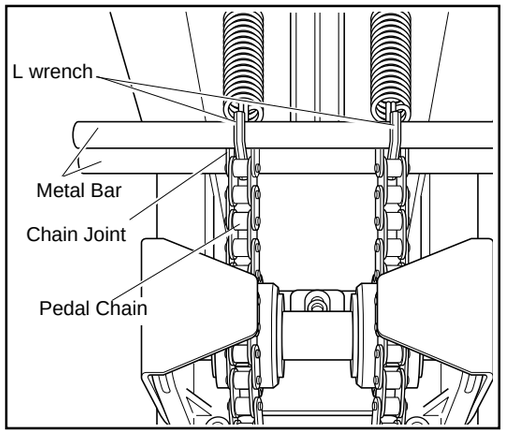


Fig.2

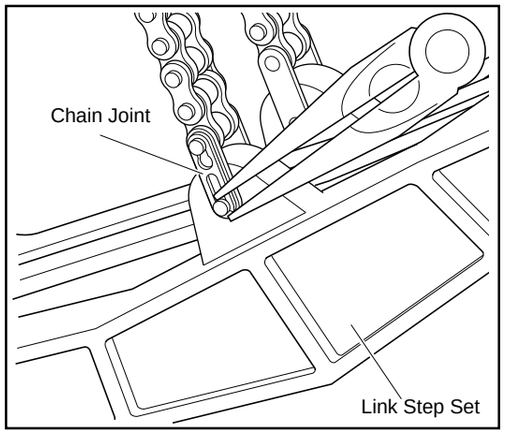


Fig.3

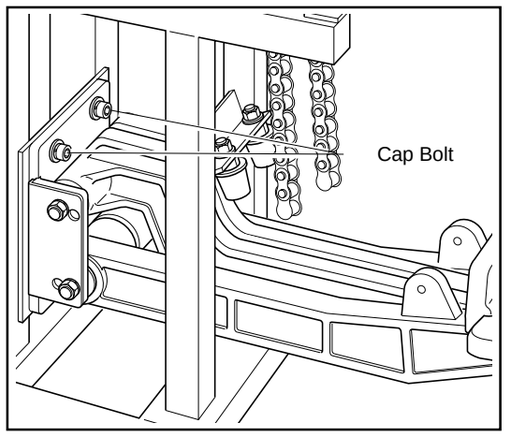


Fig.4

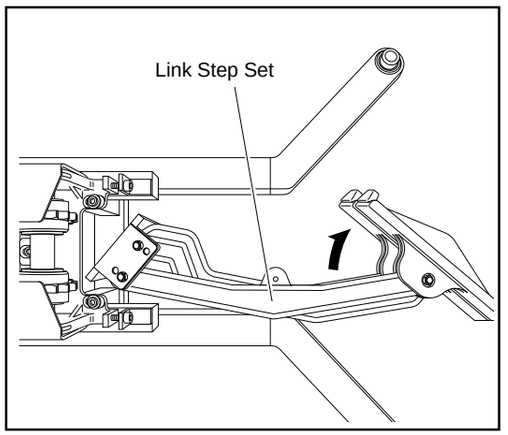


Fig.5

MS-12 Replacing the Linkstep Set (2)

The procedures stated in this section should be performed by two persons.

Also, prepare the following tools.

A. Metal Bar	2 pieces	(Dia: 7mm to 20mm, Length: 20cm or longer)
B. L Wrench	2 pieces	(Dia: 5mm to 12mm)

■ ASSEMBLE

1. Put the linkstep sideways as depicted, and insert it to the frame. (Fig. 6)

   When the linkstep is moved so that the link positions perpendicular to the pedal, the entire shape becomes such as is depicted.
2. Using four cap bolts, fix the linkstep set to the frame. (Fig. 7)
3. Insert the chain joints to the linkstep set and the leading edge of the pedal chain from right and left sides to connect them. (Fig. 8)
4. Fix the snaps to the chain joints by using a plier. (Fig. 8)
5. Lower the right and left pedals down to the lowest level, and the other worker should remove the metal bar and L wrench that have been used as stoppers.
6. Restore the pedals to the original positions.
7. Mount the frame cover.

   (See [D-2: Mounting the Frame Covers].)

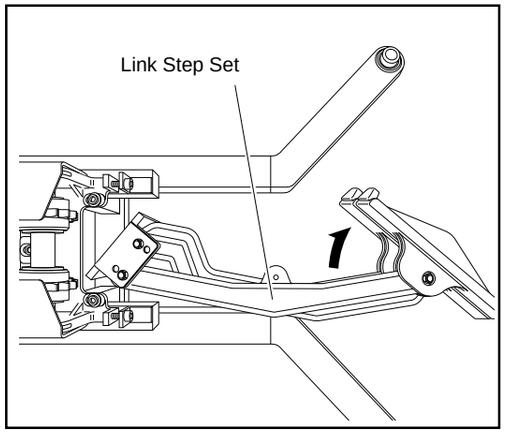


Fig.6

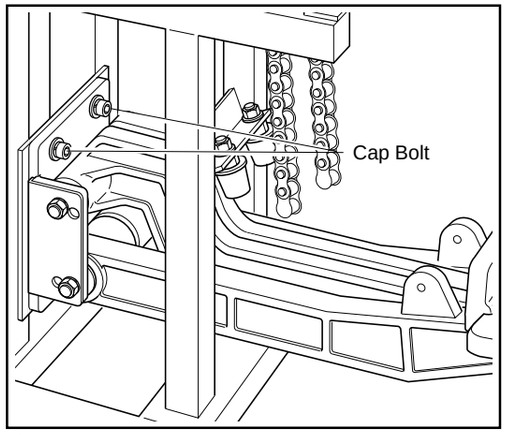


Fig.7

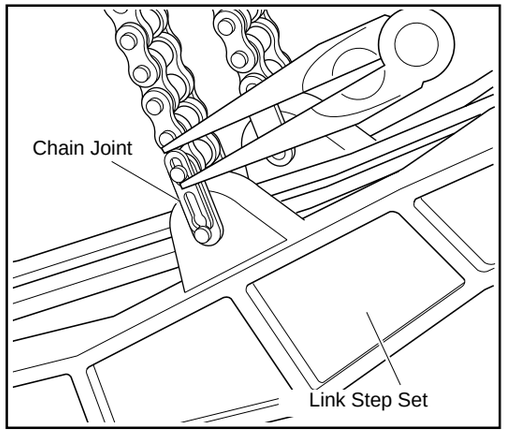


Fig.8

MS-13 Replacing the Pedal Stopper

The replacing procedures are different between the cases with and without the wrench set.

[1] Without the Wrench Set

■ REMOVAL

1. Detach the frame cover.
   (See [D-1: Removing the Frame Covers].)
2. Loosen the three-point pan-head screws (two pieces for each pedal), and detach the pedal stoppers. (Fig. 1)

■ ASSEMBLE

1. Mount the pedal stoppers by using three-point pan-head screws (two pieces for each pedal). (Fig. 1)
2. Mount the frame cover.
   (See [D-2: Mounting the Frame Covers].)

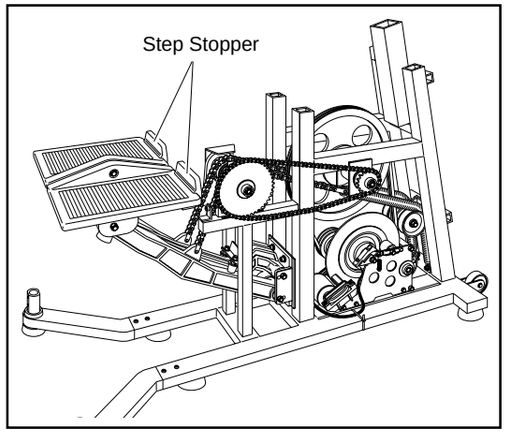
[2] With the Wrench Set

■ REMOVAL

1. Loosen the three-point pan-head screws (two pieces for each pedal), and detach the pedal stoppers. (Fig. 1)

■ ASSEMBLE

1. Mount the pedal stoppers by using three-point pan-head screws (two pieces for each pedal). (Fig. 1)



General Figure

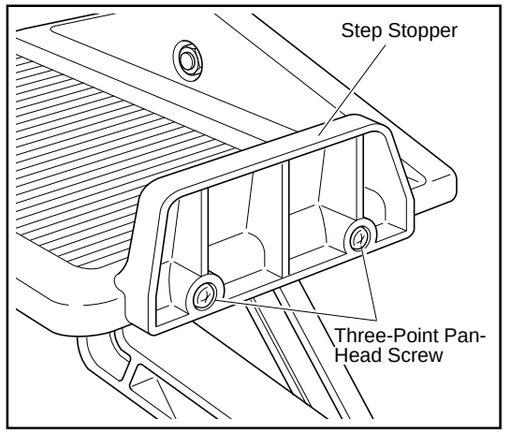


Fig.1

MS-14 Replacing the BB Set

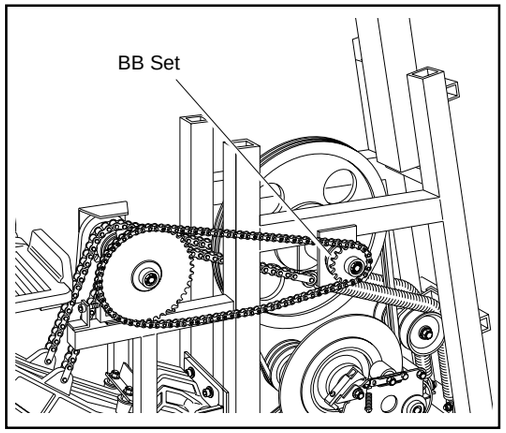
The procedures stated in this section should be performed by two persons.

■ REMOVAL

1. Detach the frame cover, and then detach the pulley A.
   (See [MS-6: Replacing the Pulley A]: ■ REMOVAL.)
2. Detach the accelerating chain, and then detach the sprocket B.
   (See [MS-8: Replacing the Sprocket (Gear for Chains)]: [1] Sprocket B: ■ REMOVAL.)
3. Detach the lock ring by using a hanger rotating jig. (Fig. 1)
4. Detach the right side hanger one by using a pin face wrench. (Fig. 2)
5. Detach the pulley shaft.
6. Detach the left side hanger one by using the hanger rotating jig. (Fig. 3)

■ ASSEMBLE

1. Check if no used retainer remains within the hanger pipe.
2. Assemble the pulley shaft retainer and right and left hanger lock rings as depicted. (Fig. 4)
3. Mount the sprocket B, and then mount the accelerating chain.
   (See [MS-8: Replacing the Sprocket (Gear for Chains)]: [1] Sprocket B: ■ ASSEMBLE.)
4. Mount the pulley A, and then mount the frame cover.
   (See [MS-6: Replacing the Pulley A]: ■ ASSEMBLE.)



General Figure

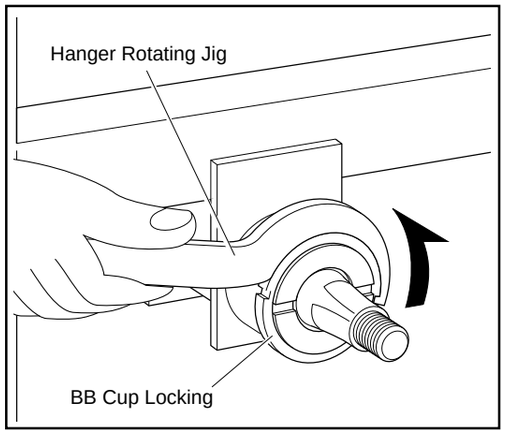


Fig.1

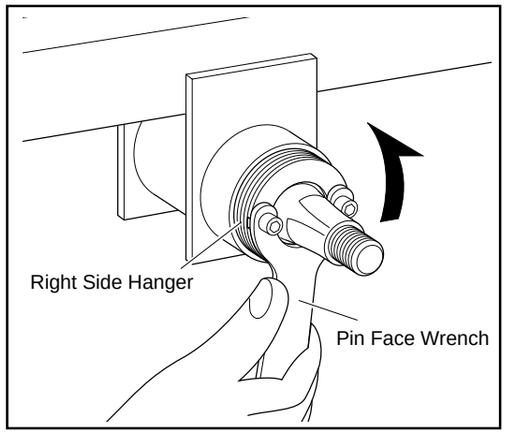


Fig.2

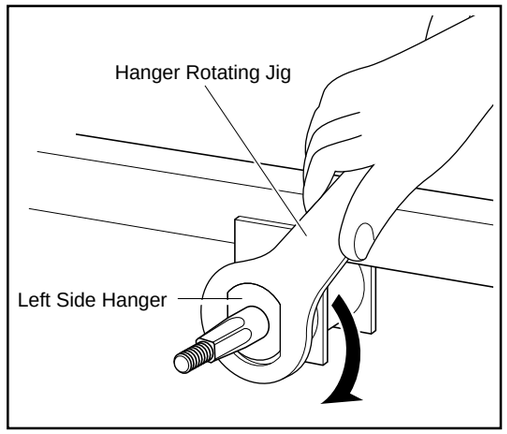


Fig.3

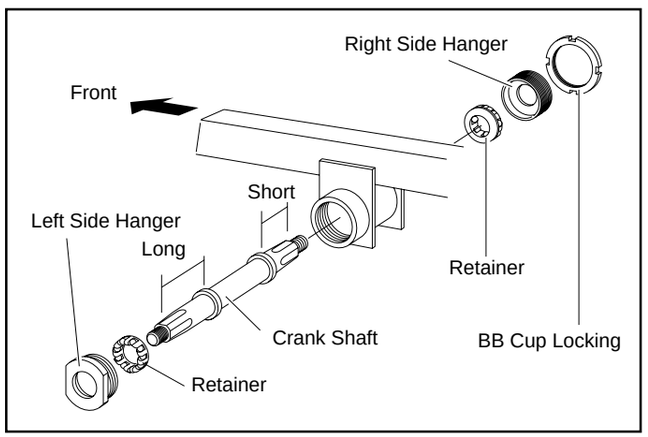


Fig.4

MS-15 Replacing the Front Leg Cover

1. Apply a blade-head screwdriver or the like to detach the front leg cover. (Fig. 1)
2. Mount a brandnew leg cover.

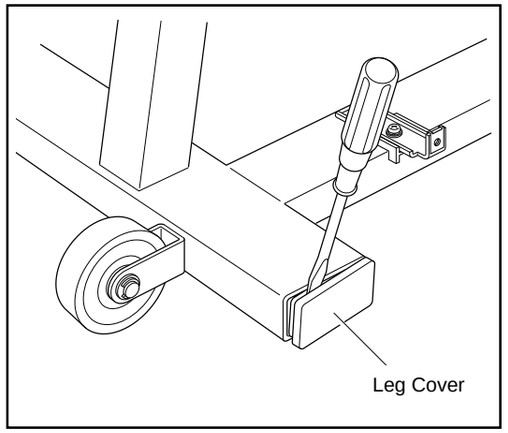


Fig.1

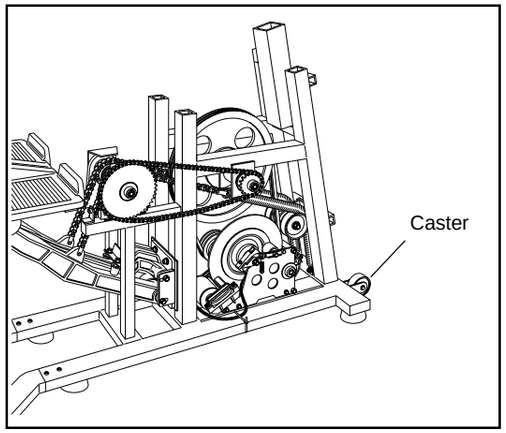
MS-16 Replacing the Caster

■ REMOVAL

1. Detach the frame cover.
   (See [D-1: Removing the Frame Covers].)
2. Press a plier onto the E-ring, and detach it by pushing the plier. (Fig. 1)
3. Detach the wheel shaft and detach the caster.

■ ASSEMBLE

1. Pass the wheel shaft through the caster hole on the frame. (Fig. 2)
2. Put a plain washer onto the wheel shaft, and insert the E-ring at the groove on the wheel shaft. (Fig. 2)
3. Mount the frame cover.
   (See [D-2: Mounting the Frame Covers].)



General Figure

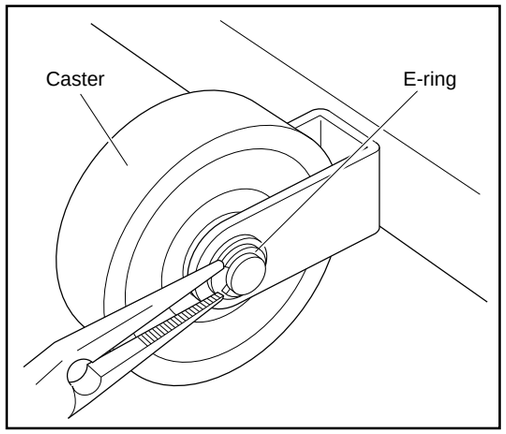


Fig.1

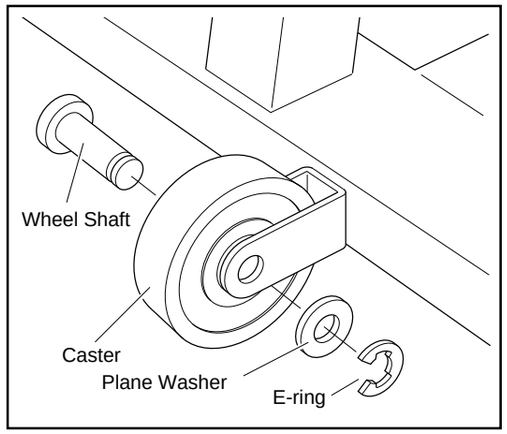


Fig.2

MS-17 Replacing the Rubber Stopper

In the case of replacing the rubber stopper, be sure to change both of the two rubber stopper.

1. Detach the frame cover.

   (See [D-1: Removing the Frame Covers].)

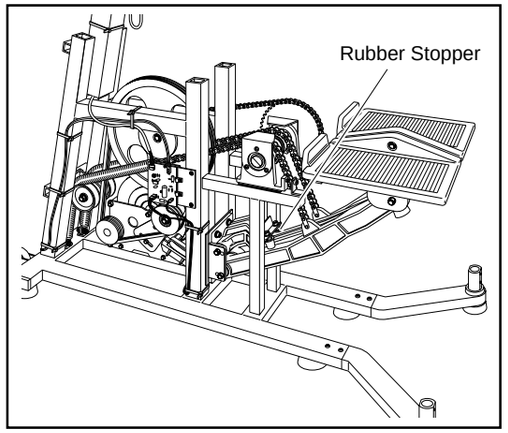
2. Lower the right side pedal to the lowest position.
3. While maintaining the status as obtained in 2 above, loosen the hexagon head nut and detach the right side rubber stopper. (Fig. 1)
4. Place a new rubber stopper on the frame (right side) and fix it with the hexagon nut.

   After having detached the rubber stopper, restore the pedal to the original position.

5. Lower the left side pedal to the lowest position.
6. While maintaining the status as obtained in 4 above, loosen the hexagon head nut and detach the left side rubber stopper. (Fig. 2)
7. Plase a new rubber stopper on the frame (left side) and fix it with the hexagon nut.

   After having detached the rubber stopper, restore the pedal to the original position.

8. Mount the frame cover. (See [D-2: Mounting the Frame Covers].)



General Figure

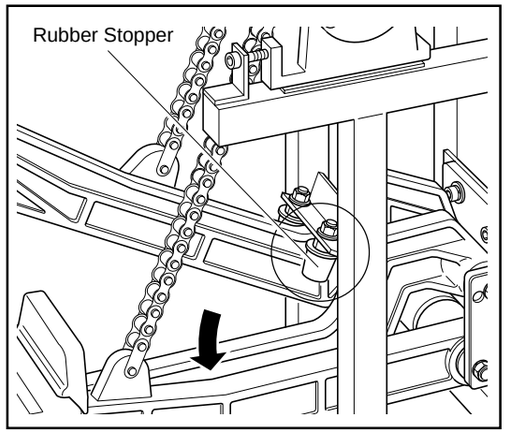


Fig.1

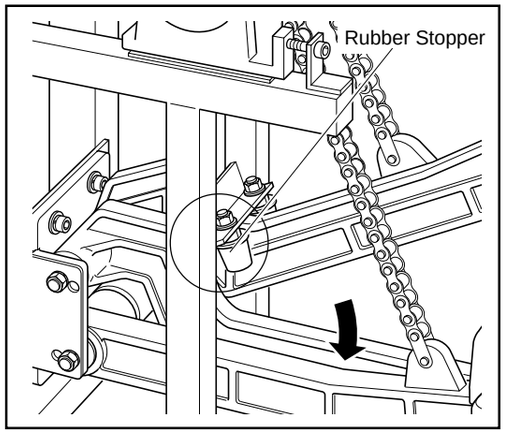


Fig.2

MS-18 Replacing the Tray

■ REMOVAL

1. Remove the seven tapping screws at the control unit cover, and then detach the control unit.
2. Disconnect the 5P cable which is connected to the cable inlet at the back of the control unit. Do this by holding the cable connector.
3. Remove the tapping screws (one for each joint pipe) at the joint pipe, and detach the tray.

■ ASSEMBLE

1. Set the tray to each joint pipe, and fix it by using washers and tapping screws from the back side.
2. Firmly insert the cable connector, which is at the leading edge of the 5P cable, to the cable inlet at the back of the control unit cover.
3. Put the control unit on the control unit cover, and fix it by using seven tapping screws from underneath.

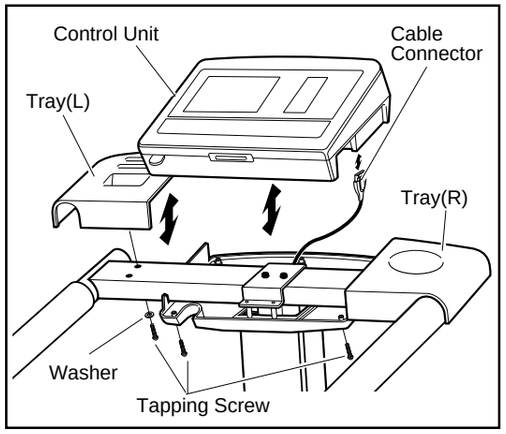
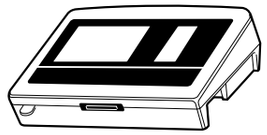
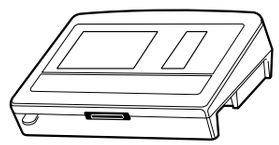


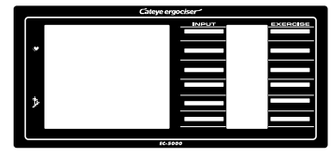
Fig.1



PNR.781-6101 EC-5000 Control Unit (E)
PNR.781-6102 EC-5000 Control Unit (G)
PNR.781-6103 EC-5000 Control Unit (F)
PNR.781-6106 EC-5000 Control Unit (E) Black
PNR.781-6107 EC-5000 Control Unit (G) Black
PNR.781-6104 EC-5000 Control Unit (F) Black
unit:pieces

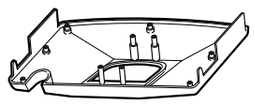


PNR.781-6108 EC-5000 Control Unit Multi
PNR.781-6109 EC-5000 Control Unit Multi Black
unit:pieces

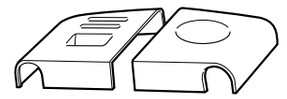


PNR.781-6441 EC-5000 Decal (E)
PNR.781-6442 EC-5000 Decal (G)
PNR.781-6443 EC-5000 Decal (F)
unit:pieces

PNR.781-6111 EC-5000 Button Panel (E) (G) (F)
unit:pieces

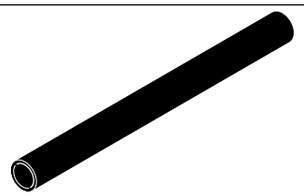


PNR.781-6030 Control Unit Cover
(Control Unit Bottom Cover)
PNR.781-6031 Control Unit Cover (Black)
unit:pieces

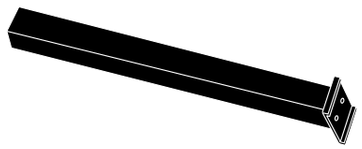


PNR.781-6040 Tray (R/L)
PNR.781-6041 Tray (R/L) Black
unit:sets

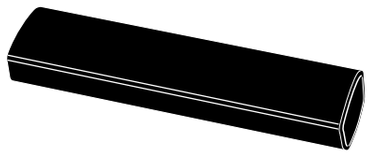
PNR.781-6300 Handrail Pipe
PNR.781-6301 Handrail Pipe Black
unit:pieces



PNR.781-6430 Handrail Grip
unit:pieces

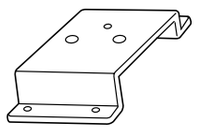


PNR.781-6310 Console Post
unit:pieces

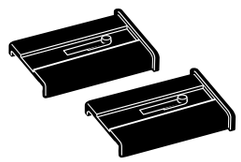


PNR.781-6020 Console Post cover
unit:pieces

PNR.781-6320 Joint Pipe
unit:pieces

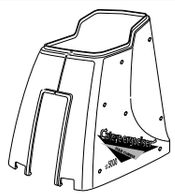


PNR.781-6340 Metal Fitting(Joint Pipe Fitting)
unit:pieces

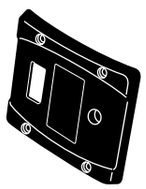


PNR.781-5030 Pipe Spacer Set
unit:sets

PNR.781-6010 Center Cover (Body Top Cover)
unit:pieces

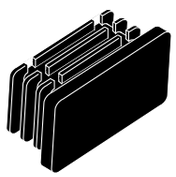


PNR.781-6000 Frame Cover (R/L)
PNR.781-6001 Frame Cover (R/L) Black
unit:sets

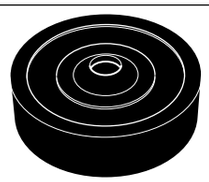


PNR.781-6050 Inlet Cover
unit:pieces

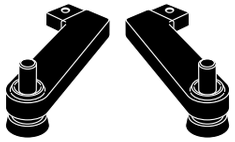
PNR.781-6060 Mole (F,R,L) (Rubber Lace Set)
unit:sets



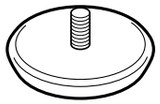
PNR.781-6070 Leg Cover (Leg Pipe End)
unit:pieces



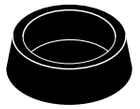
PNR.781-6385 Caster
unit:pieces



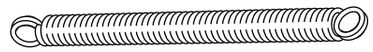
PNR.781-6330 Caster Pipe (R/L)
(Joint Leg Set)
unit:sets



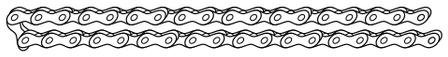
PNR.724-3950 Levelling Knob
(Hight Adjust Knob)
unit:pieces



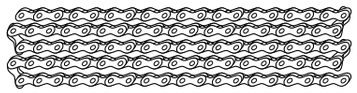
PNR.780-6550 Vibration-proof Rubber
(Levelling Knob Pad)
unit:pieces



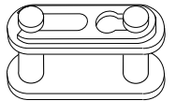
PNR.781-6280 Spring
(Chain Spring)
unit:pieces



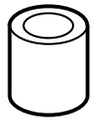
PNR.781-6260 Pedal Chain
unit:sets



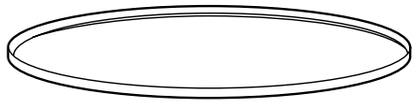
PNR.724-3010 Accelerating Chain
(Chain)
unit:sets



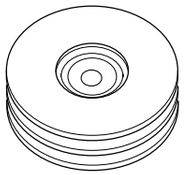
PNR.781-6270 Chain Joint
(Chain/Link Joint)
unit:pieces



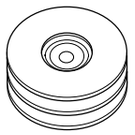
PNR.781-6281 Spring Spacer
unit:pieces



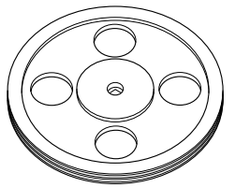
PNR.781-6250 V-Belt
unit:sets



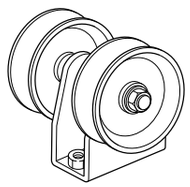
PNR.781-6205 EC-5000 V-Belt Tension Pulley
unit:pieces



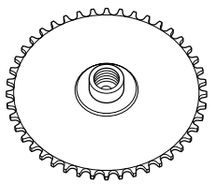
PNR.781-6230 EC-5000 Pulley A
unit:pieces



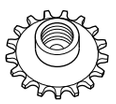
PNR.781-6230 EC-5000 Pulley B Set
unit:pieces



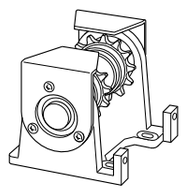
PNR.781-6240 Spring Pulley Set
unit:sets



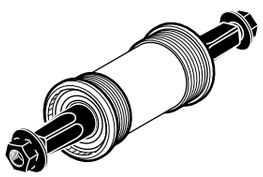
PNR.781-6290 Sprocket A (36T)
unit:pieces



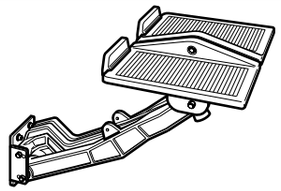
PNR.781-6291 Sprocket B (14T)
unit:pieces



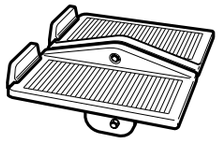
PNR.781-6220 Shaft Set A
unit:sets



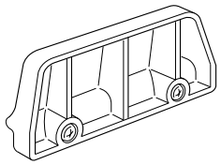
PNR.781-9200 Cartridge B.B (YST-986A)
unit:sets



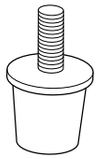
PNR.781-6210 Link Step Set
(Pedal and Link Set)
unit:sets



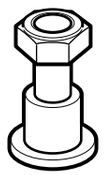
PNR.781-6420 EC-5000 Pedal Set (L/R)
unit:sets



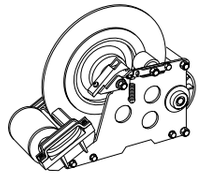
PNR.781-6360 Step Stopper
unit:pieces



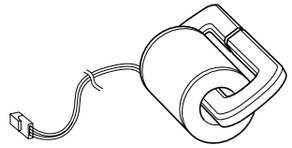
PNR.781-6380 Rubber Stopper
(Pedal Stopper)
unit:pieces



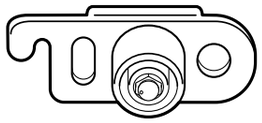
PNR.781-6410 EC-5000 Axle & Nut Set
unit:sets



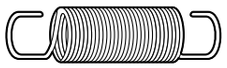
PNR.781-6200 EC-5000 Workload Unit
unit:sets



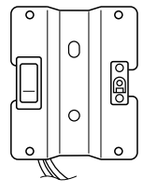
PNR.780-2100 Solenoid Coil Set
(Electric Magnet Coil)
unit:sets



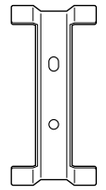
PNR.780-2220 Idler Set
unit:sets



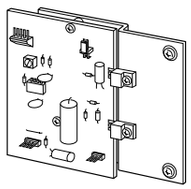
PNR.720-1110 Idler Spring
unit:pieces



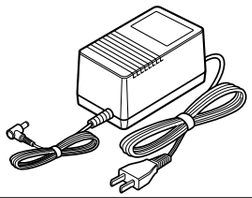
PNR.781-6370 Inlet Metal Base
(Inlet Metal Fitting)
unit:pieces



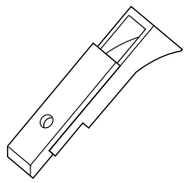
PNR.781-6371 Inlet Support Metal
unit:pieces



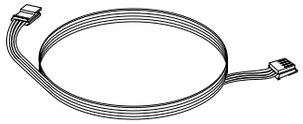
PNR.781-6160 EC-5000 Power Supply Board
unit:pieces



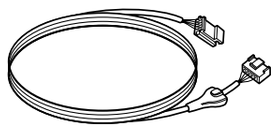
PNR.781-6140 AC Adapter JPN (100V)
PNR.781-6141 AC Adapter UL/CSA (120V)
PNR.781-6142 AC Adapter AS (240V)
PNR.781-6143 AC Adapter EC (230V)
unit:pieces



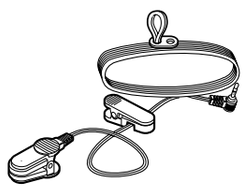
PNR.782-0220 CDC Sensor Set
(Roller Revolution Sensor Set)
unit:pieces



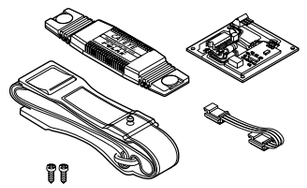
PNR.781-6150 EC-5000 CDC Sensor Cable
(Revolution Sensor Cable)
unit:pieces



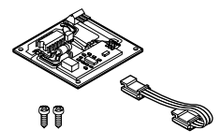
PNR.780-6220 EC-5000 5P Cable
(5P Cable)
unit:pieces



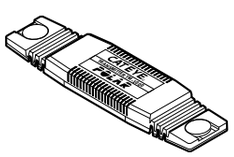
PNR.780-1100 Pluse Sensor Set
unit:sets



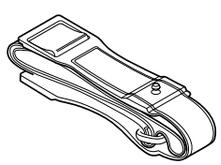
PNR.701-6701 Wireless Heart Rate Sensor
(TM-1000 Wireless Pulse Sensor Kit)
unit:sets



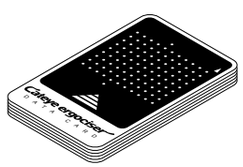
PNR.781-6801 Heart Rate Receiving Circuit
(Wireless Pulse Receiver Kit)
unit:sets



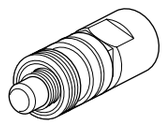
PNR.788-1620 TM-1000 Transmit
unit:sets



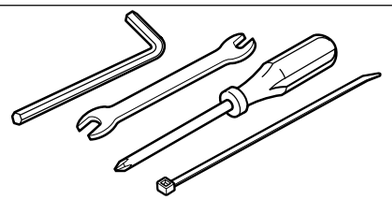
PNR.788-1621 Electrode Belt (for TM-1000)
unit:sets



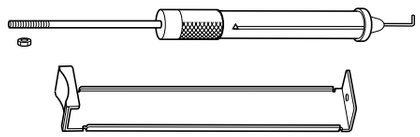
PNR.781-6120 EC-5000 Data Card
unit:sets (10pieces)



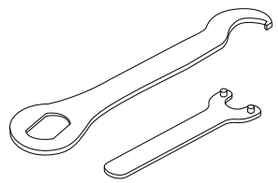
PNR.
Cotterless Gear Crank Removing/Fastening Tool
unit:pieces



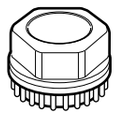
PNR.781-6390 EC-5000 Tool Kit
unit:sets



PNR.781-6400 Spring Balancer
(V-Belt Tension Adjuster)
unit:sets



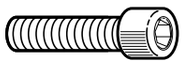
PNR.758-1080 Pin Face Wrench
(Bottom Bracket Remover)
unit:sets



PNR.781-9210 Cartridge B.B. Removing Tool
unit:sets

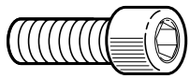
PNR.781-6131 EC-5000 Manual (E) (Owner´s Manual-E)
PNR.781-6132 EC-5000 Manual (G) (Owner´s Manual-G)
PNR.781-6133 EC-5000 Manual (F) (Owner´s Manual-F)
unit:pieces

❶



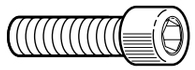
PNR.757-1622 Bolt M6x22
(Hexagonal Cap Bolt)
unit:pieces

❷



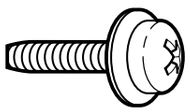
PNR.757-1820 Cap Bolt M8x20
(Hexagonal Cap Bolt)
unit:pieces

❸



PNR.757-1825 Cap Bolt M8x25
(Post Fastening Bolt)
unit:pieces

PNR.756-1413 Tapping Screw with Washer 4x12 Black
(Top Cover Screw)
unit:pieces



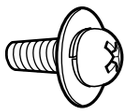
PNR.756-1412 Tapping Screw with Washer 4x12CP
(Frame Cover Screw)
unit:pieces

❹

PNR.751-7816 Tapping Screw (B) 4x16
unit:pieces

PNR.751-1416 Tapping Screw (1) 4x16
(Console Screw)
unit:pieces

❺

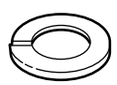


PNR.753-6412 Tapping Screw (2) 4x12
unit:pieces

❻

PNR.753-0600 Thrust Washer 6
unit:pieces

❼



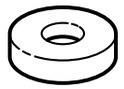
PNR.753-0800 Thrust Washer 8
unit:pieces

PNR.753-1410 Plain Washer 4-10
unit:pieces

PNR.753-1512 Plain Washer 5-12
(Tray Washer)
unit:pieces

8

PNR.753-1613 Plain Washer 6-13-1.0
unit:pieces



PNR.753-1615 Plain Washer 6-15.5-3.2
unit:pieces

9

PNR.753-1622 Plain Washer 6-22-1.6
unit:pieces

10

PNR.753-1817 Plain Washer 8-17-1.6
unit:pieces

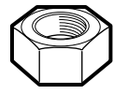
11

PNR.752-6040 E-Ring 4
unit:pieces

12

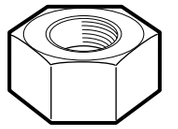
PNR.752-1061 Hexagonal Nut M6-1
unit:pieces

13



PNR.752-1085 Hexagonal Nut M8-3
unit:pieces

14



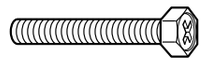
PNR.752-1101 Hexagonal Nut M10-1
unit:pieces

PNR.752-0161 Nut M6
(Handrail Nut)
unit:pieces

15

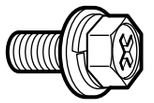
PNR.724-4803 Crank Nut M10-1.25
unit:pieces

16

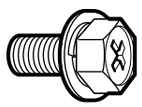


PNR.750-8645 Bolt (+) M6x45
(Assemble Bolt)
unit:pieces

17



PNR.750-9612 Bolt (+) M6x12
unit:pieces



PNR.750-9616 Bolt (+) M6x16 1.0x16
unit:pieces

PNR.751-2417 Dish-Head Screw M4x0.7x16 Black
(Inlet Cover Screw)
unit:pieces

PNR.752-9440 Speed Nut U4
unit:pieces

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